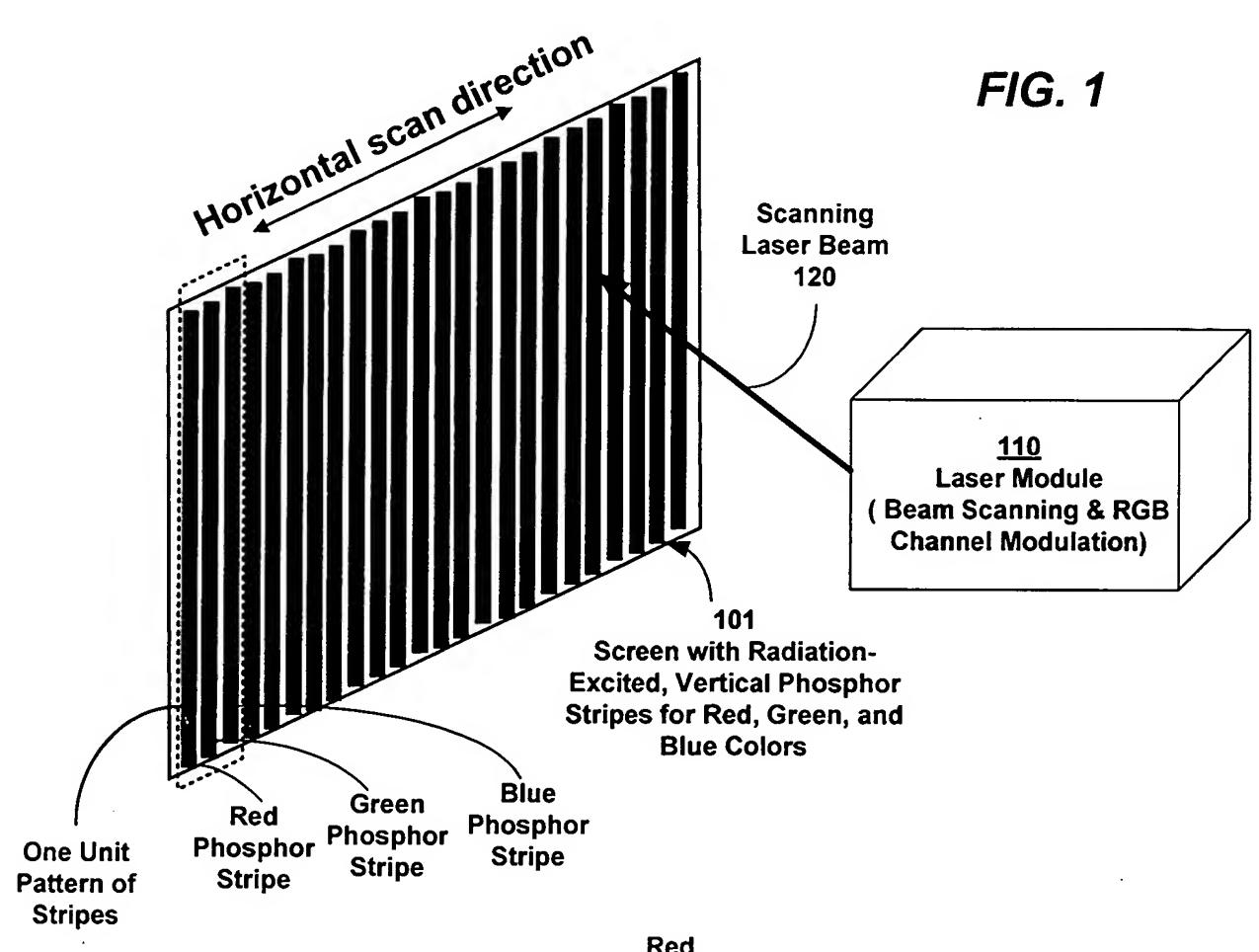
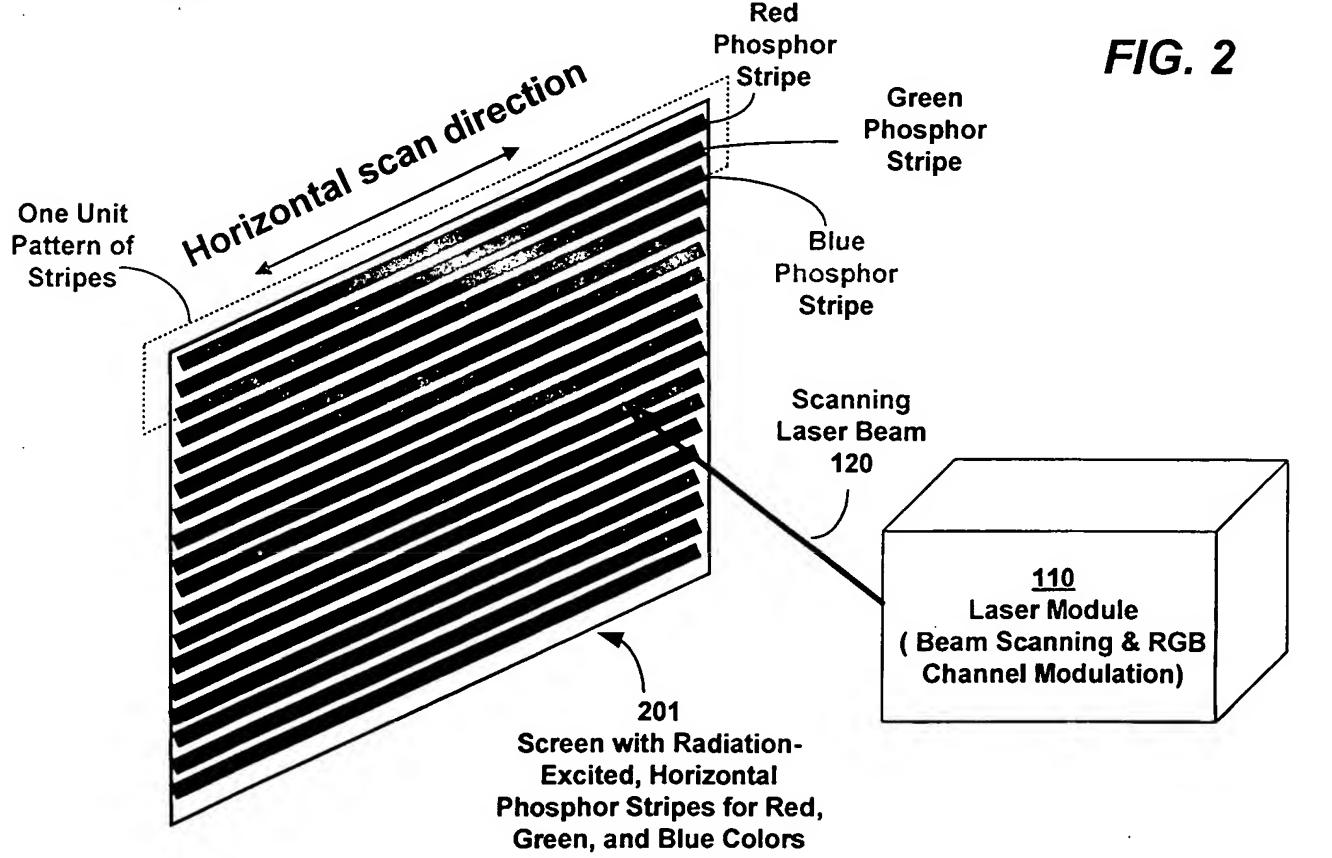
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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL





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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FIG. 3A

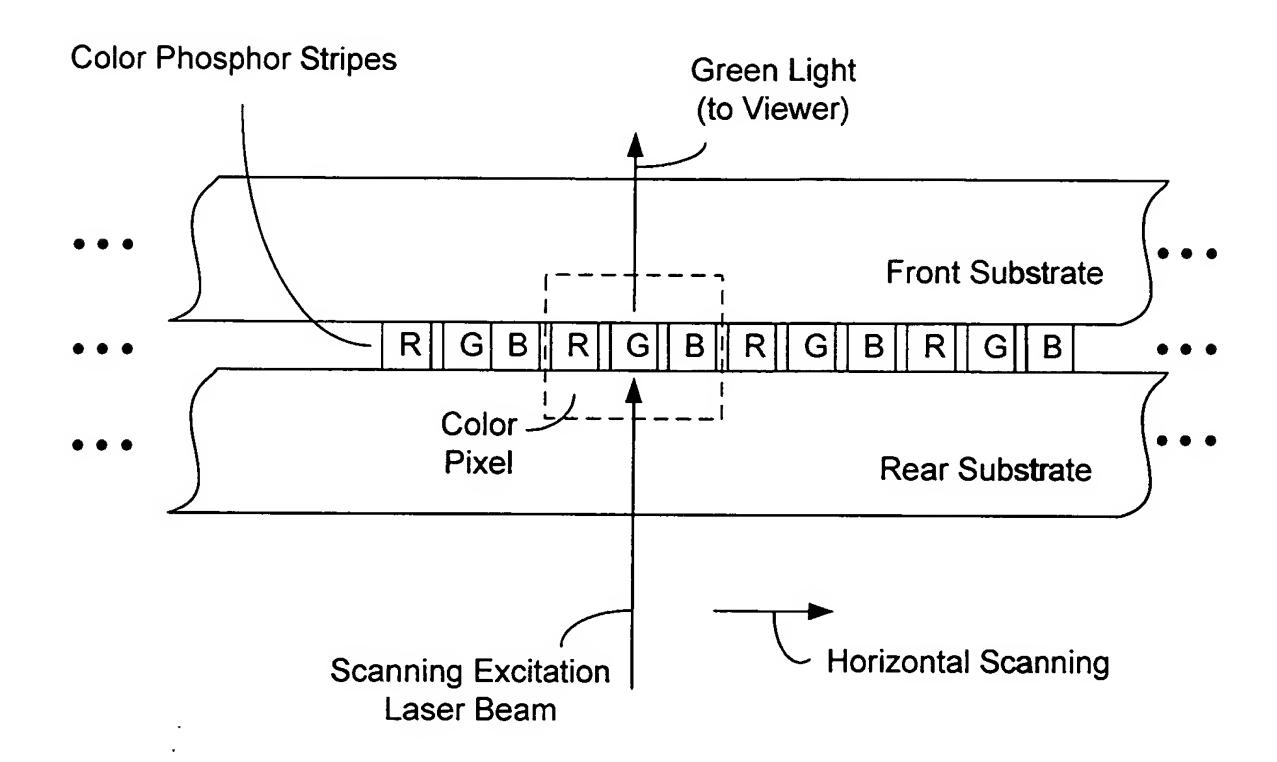
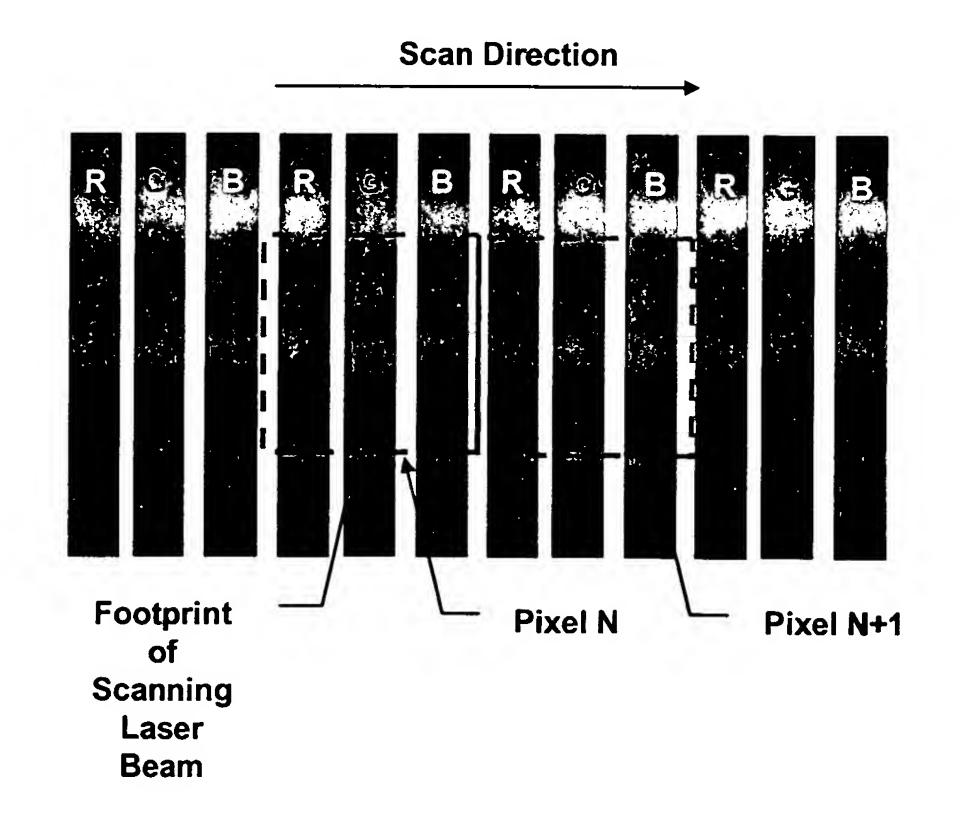


FIG. 3B



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Patrick Tan; David Kindler;

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FIG. 4

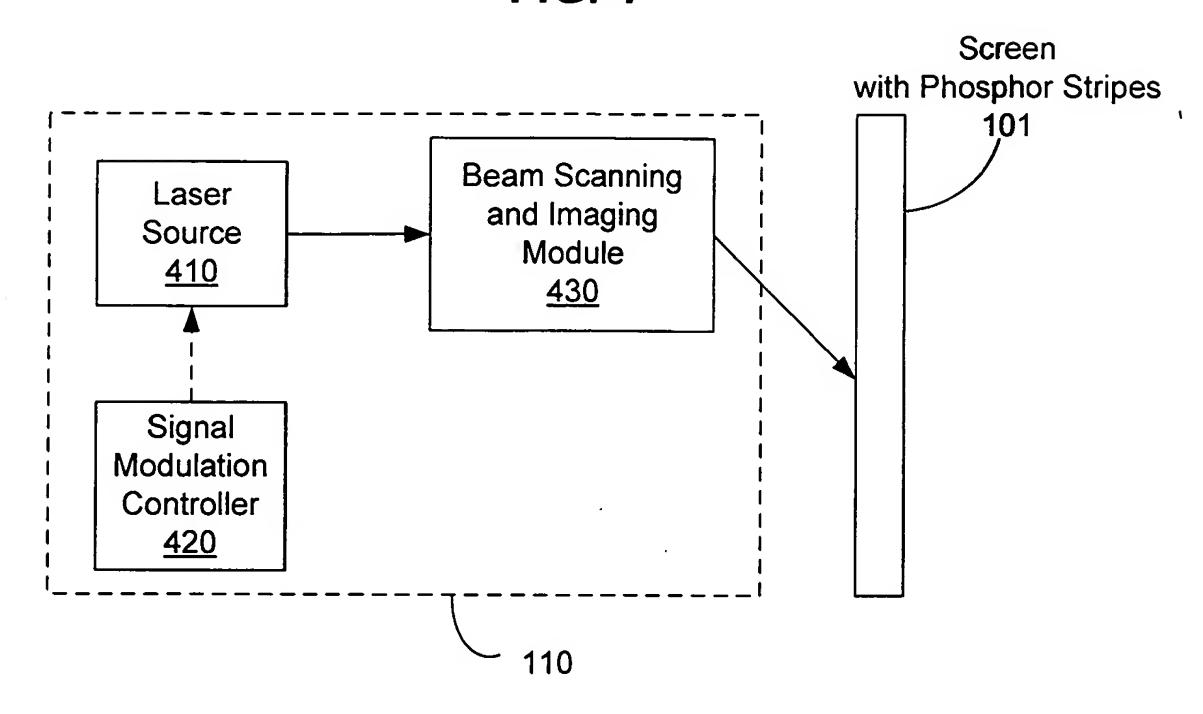
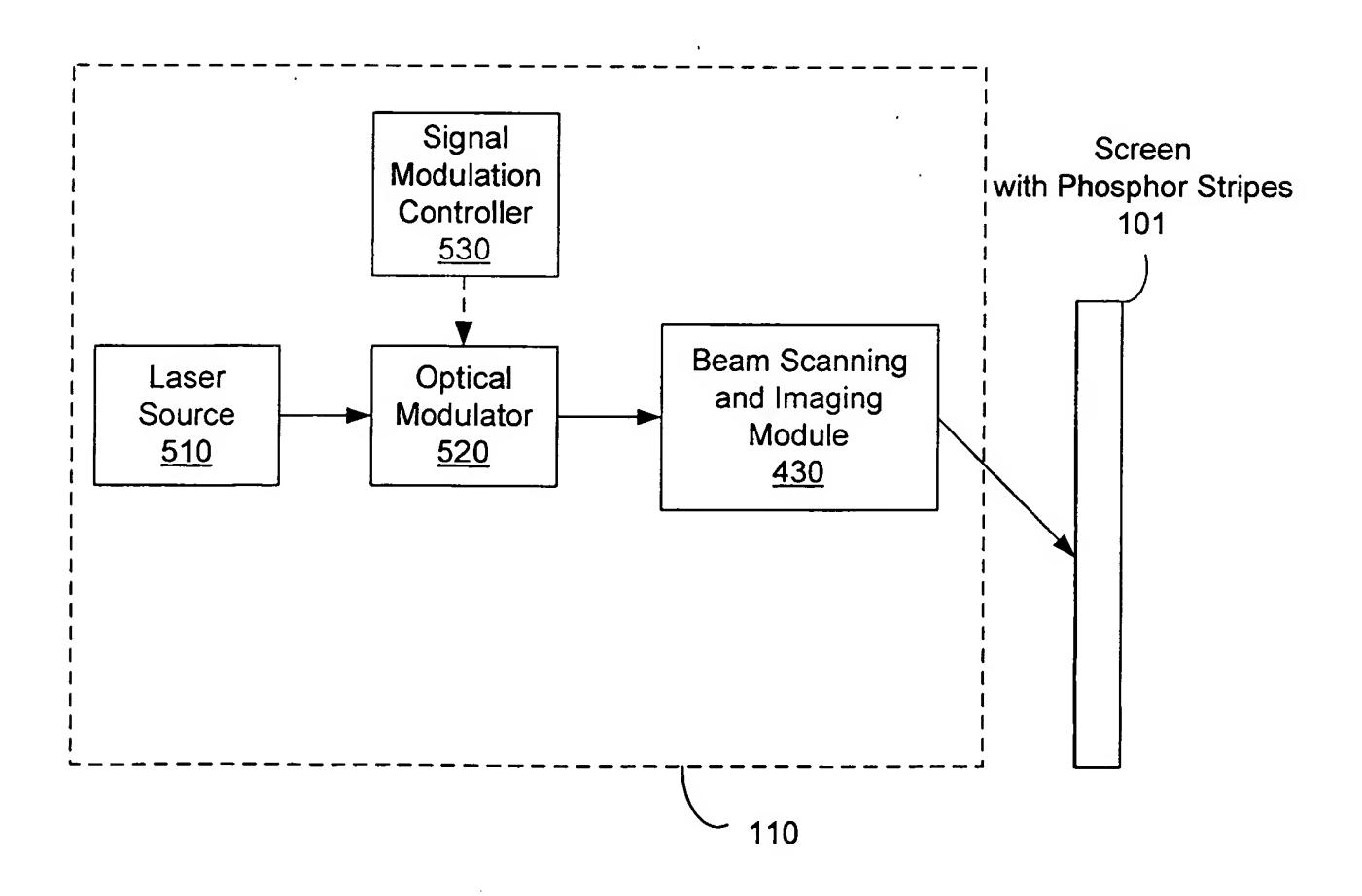


FIG. 5



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Patrick Tan; David Kindler;
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FIG. 6

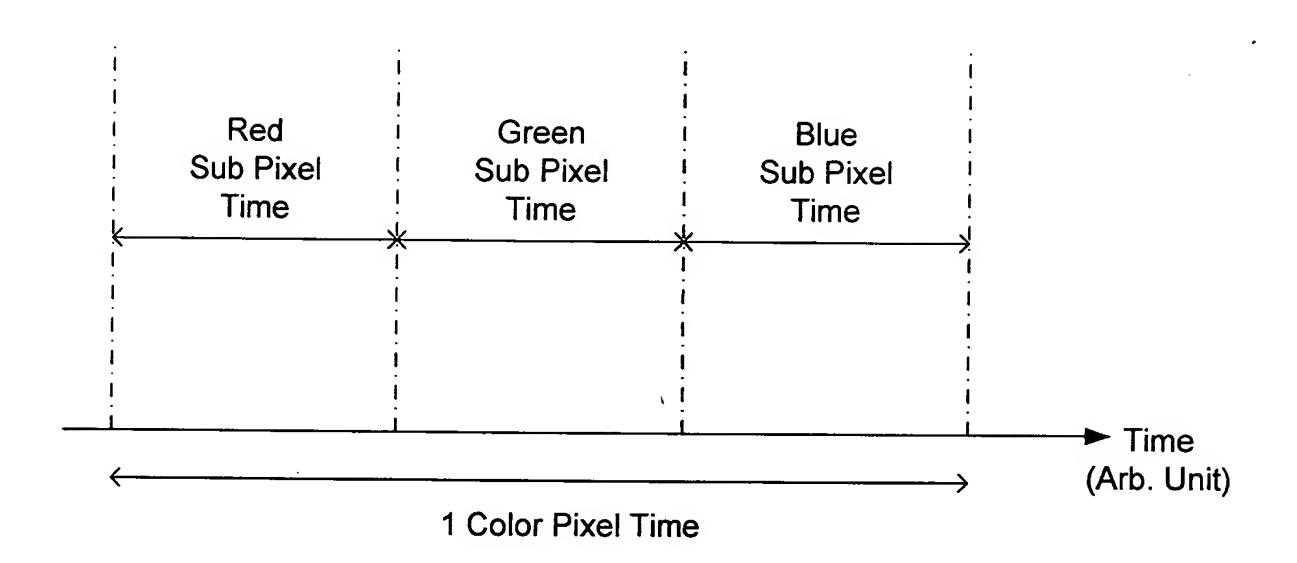
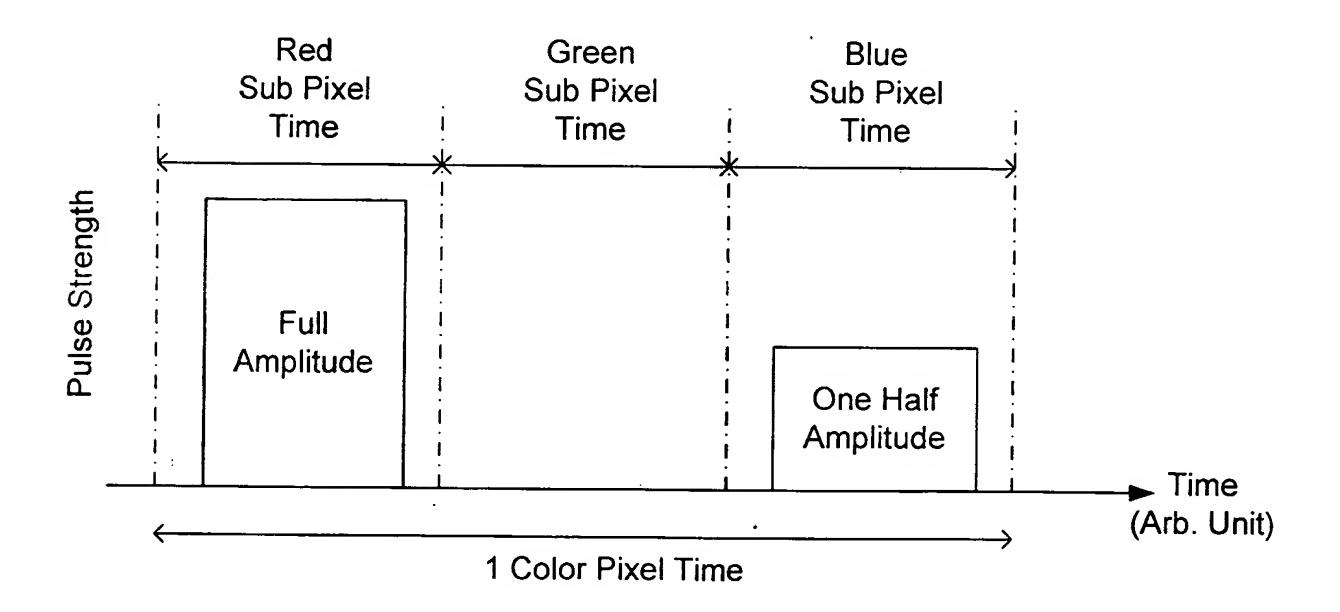


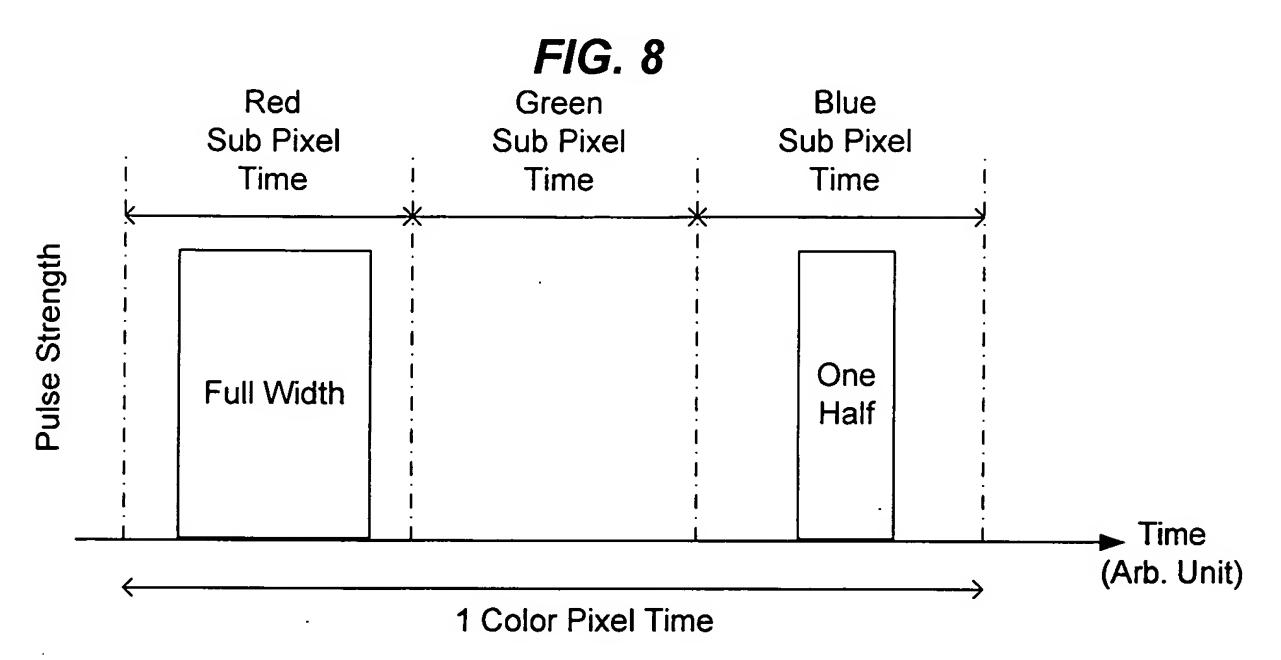
FIG. 7

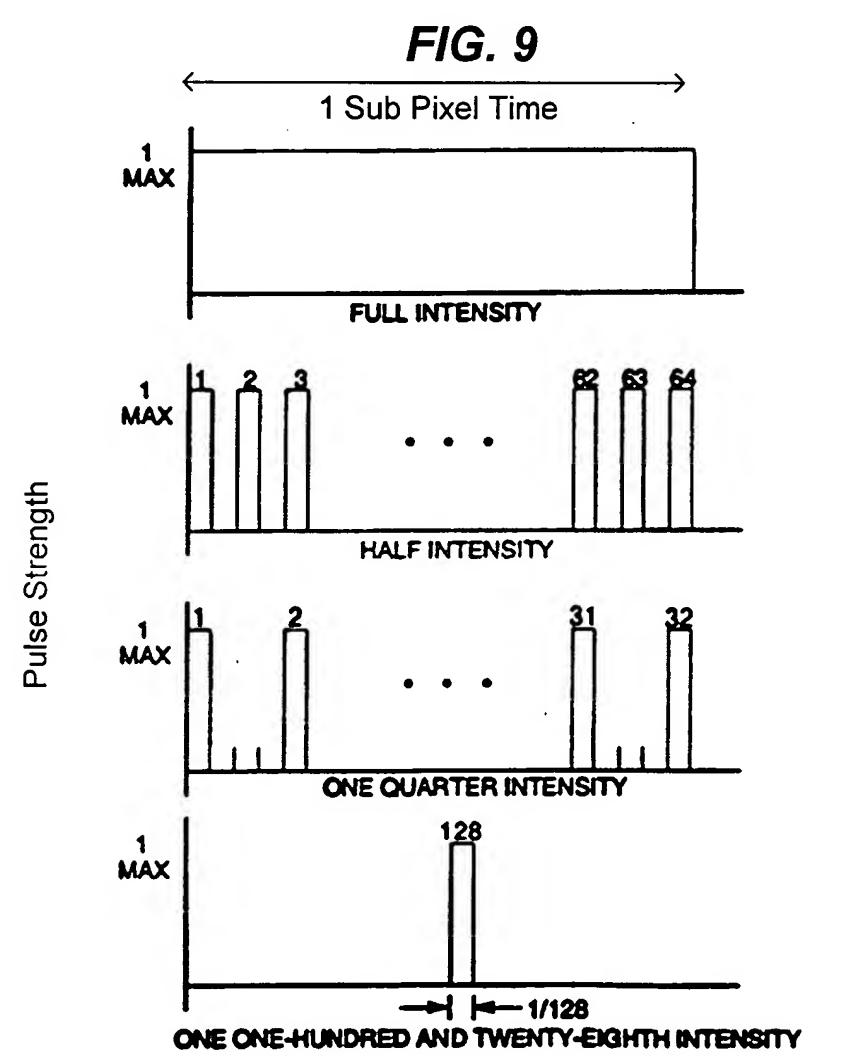


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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL





PULSE WIDTH MODULATION FOR 128 GREY LEVELS

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FIG. 10A

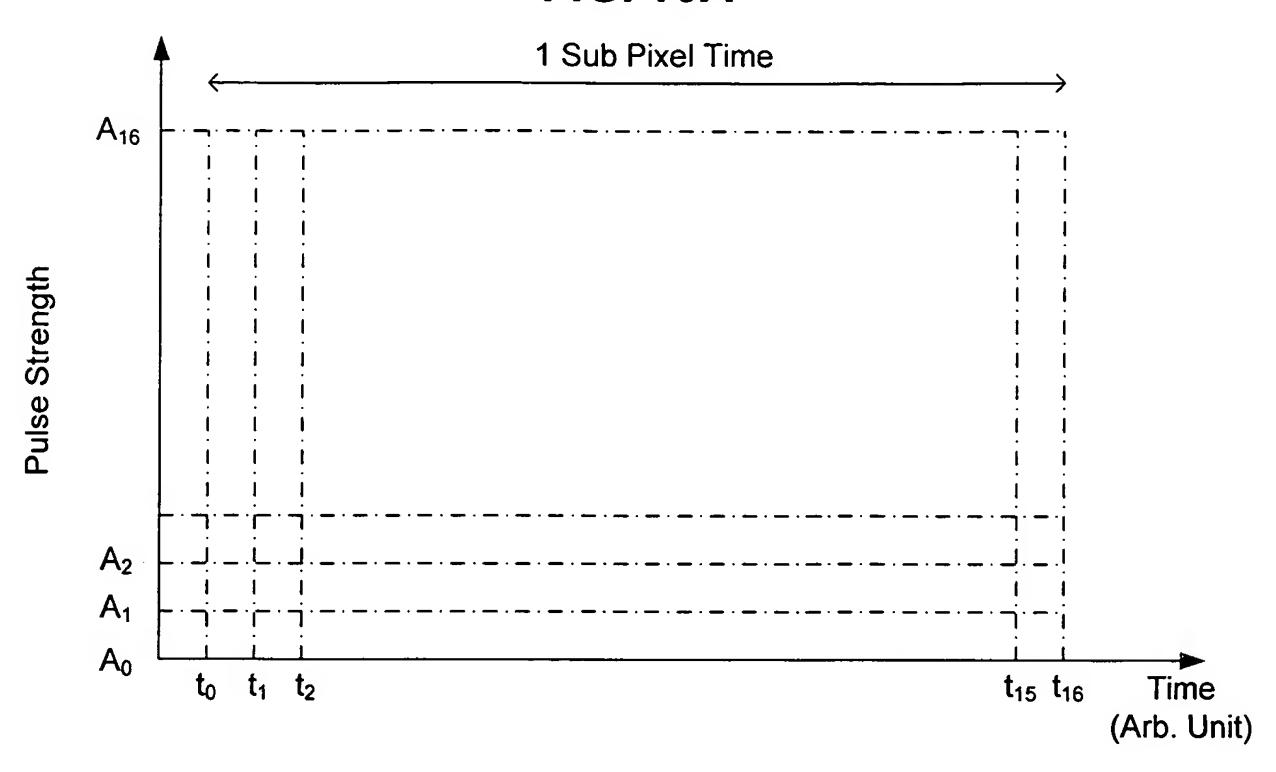
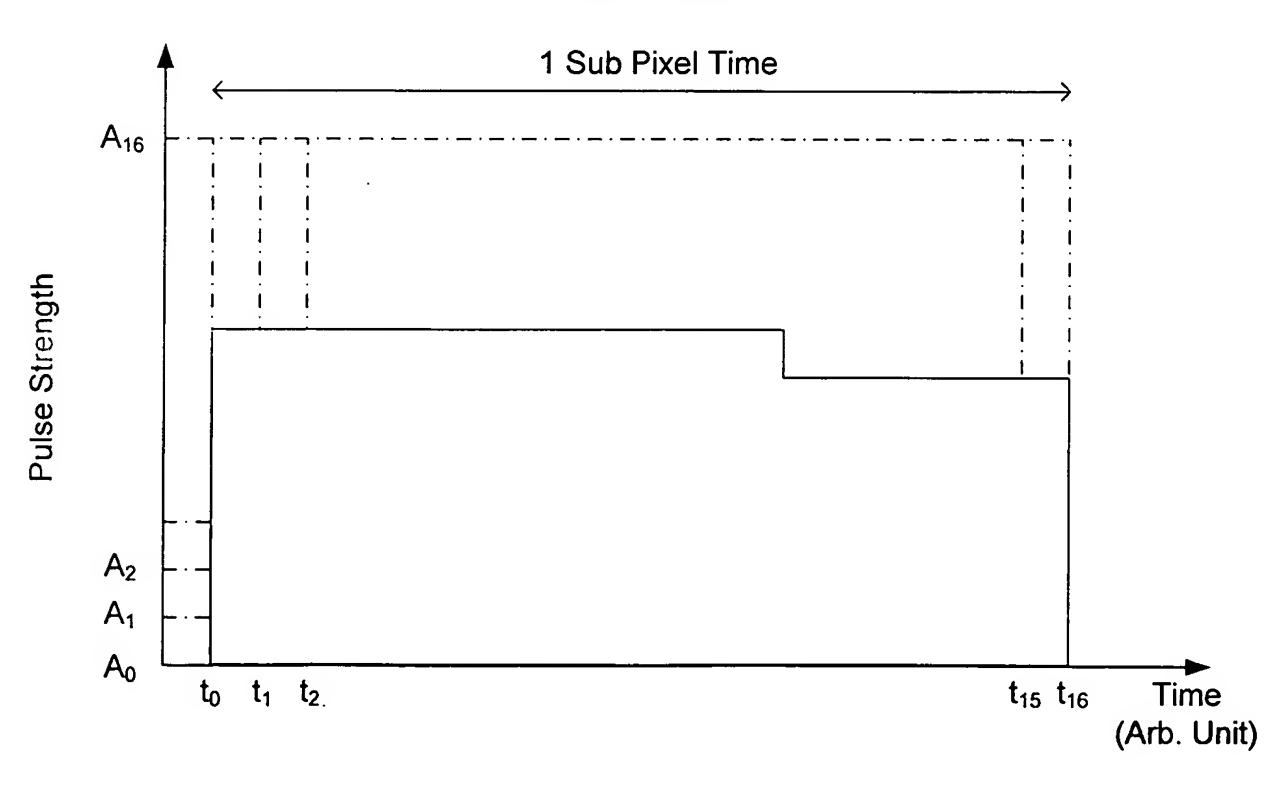


FIG. 10B



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Patrick Tan; David Kindler;

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FIG. 11

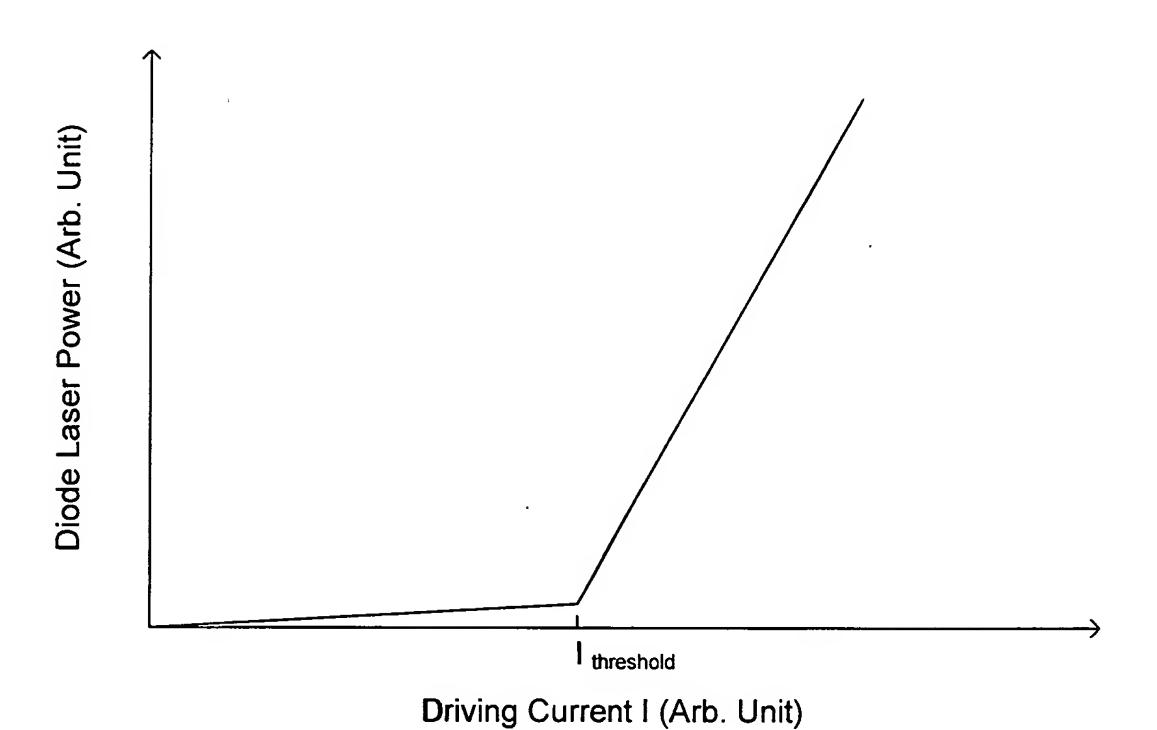
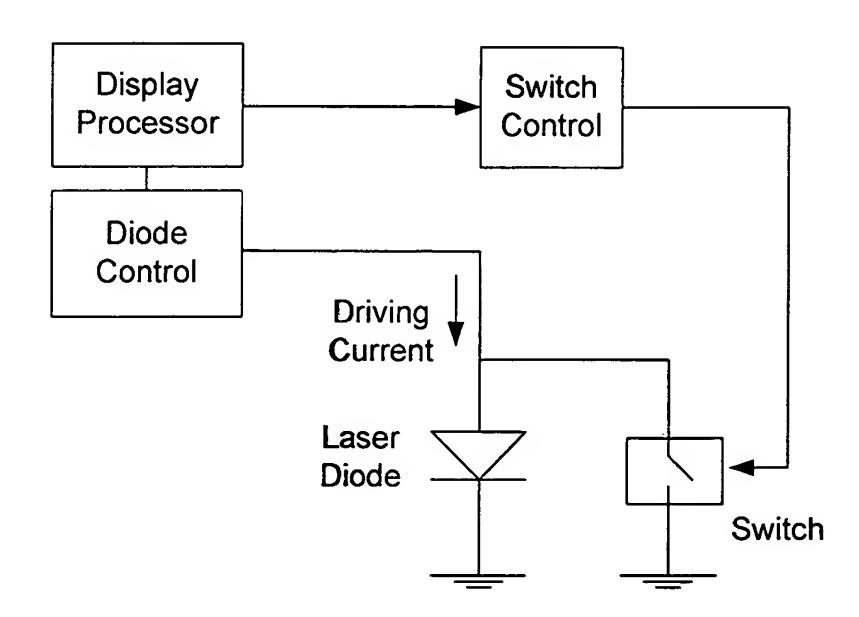


FIG. 12



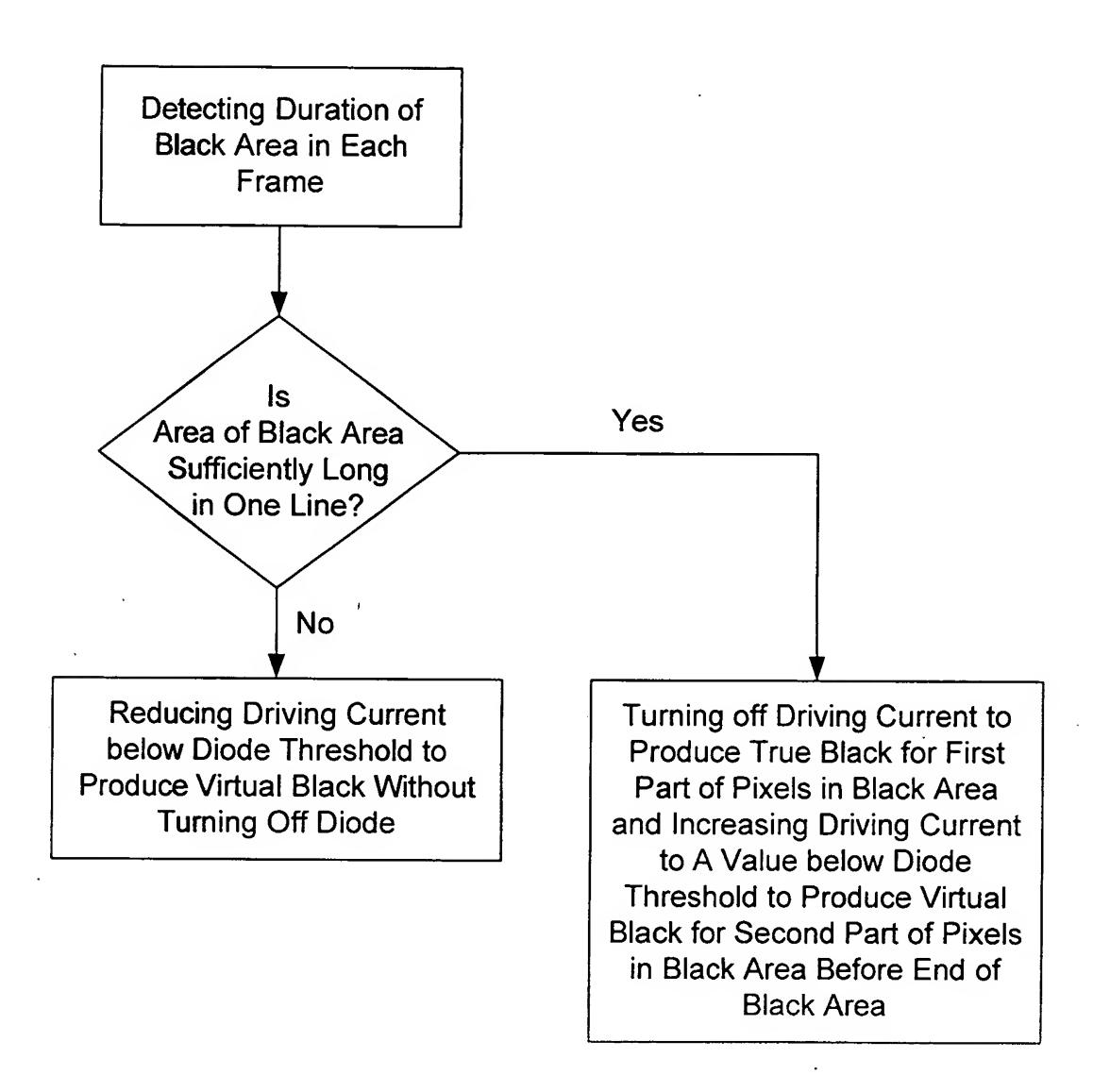
ł

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Patrick Tan; David Kindler;

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FIG. 13



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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FIG. 14

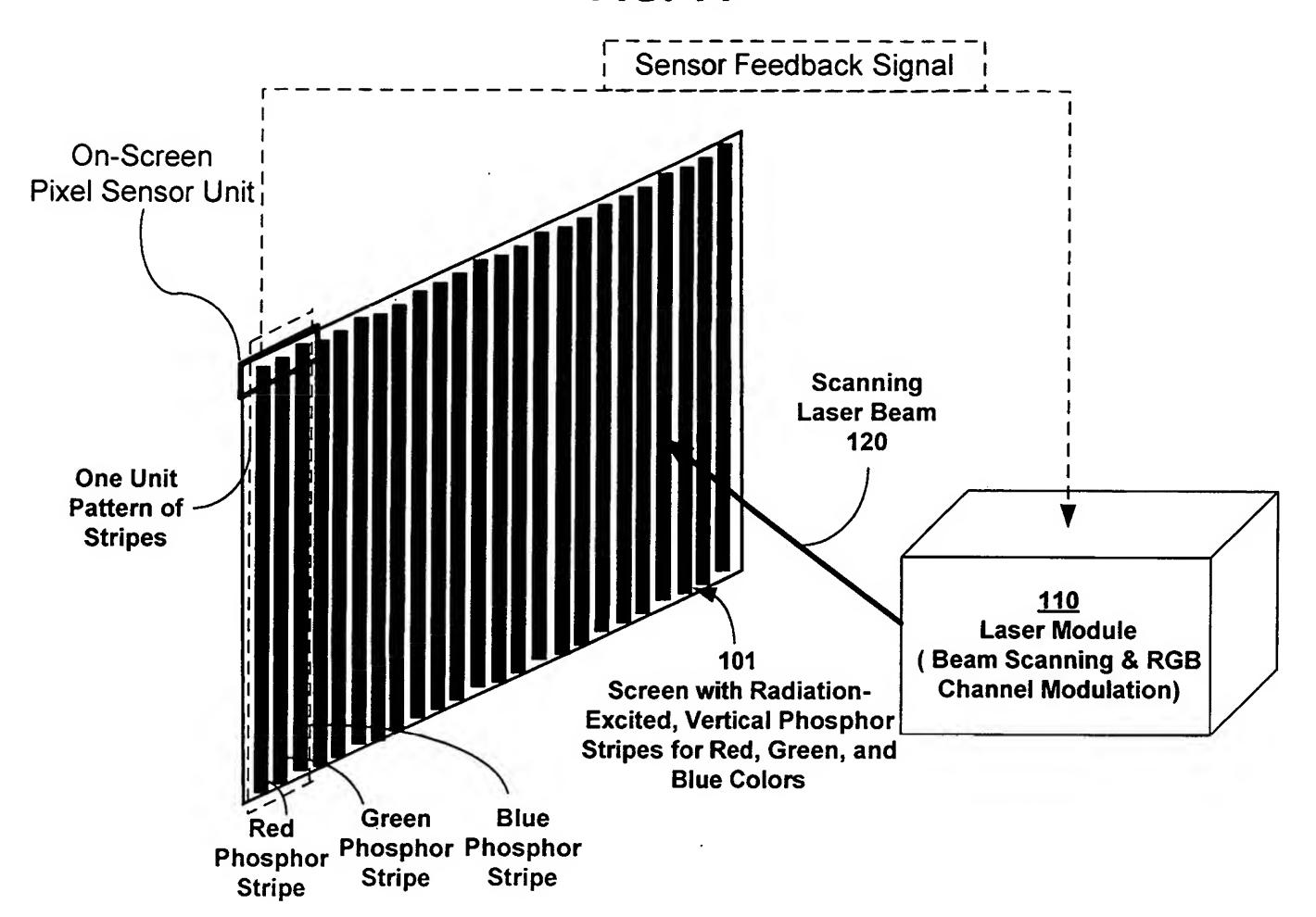
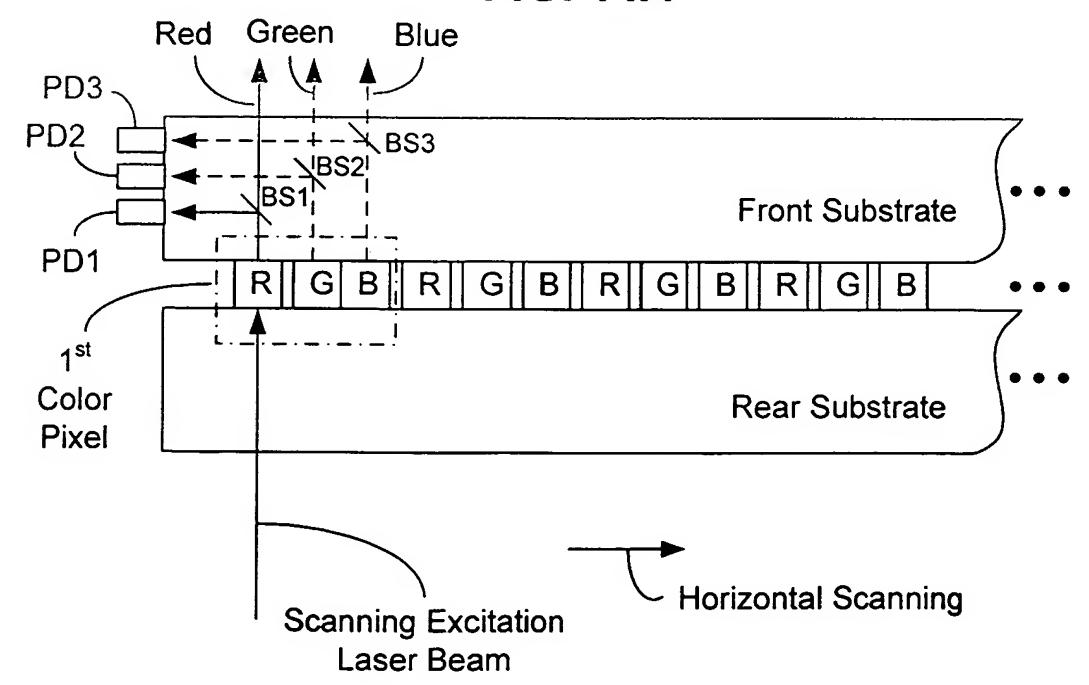


FIG. 14A



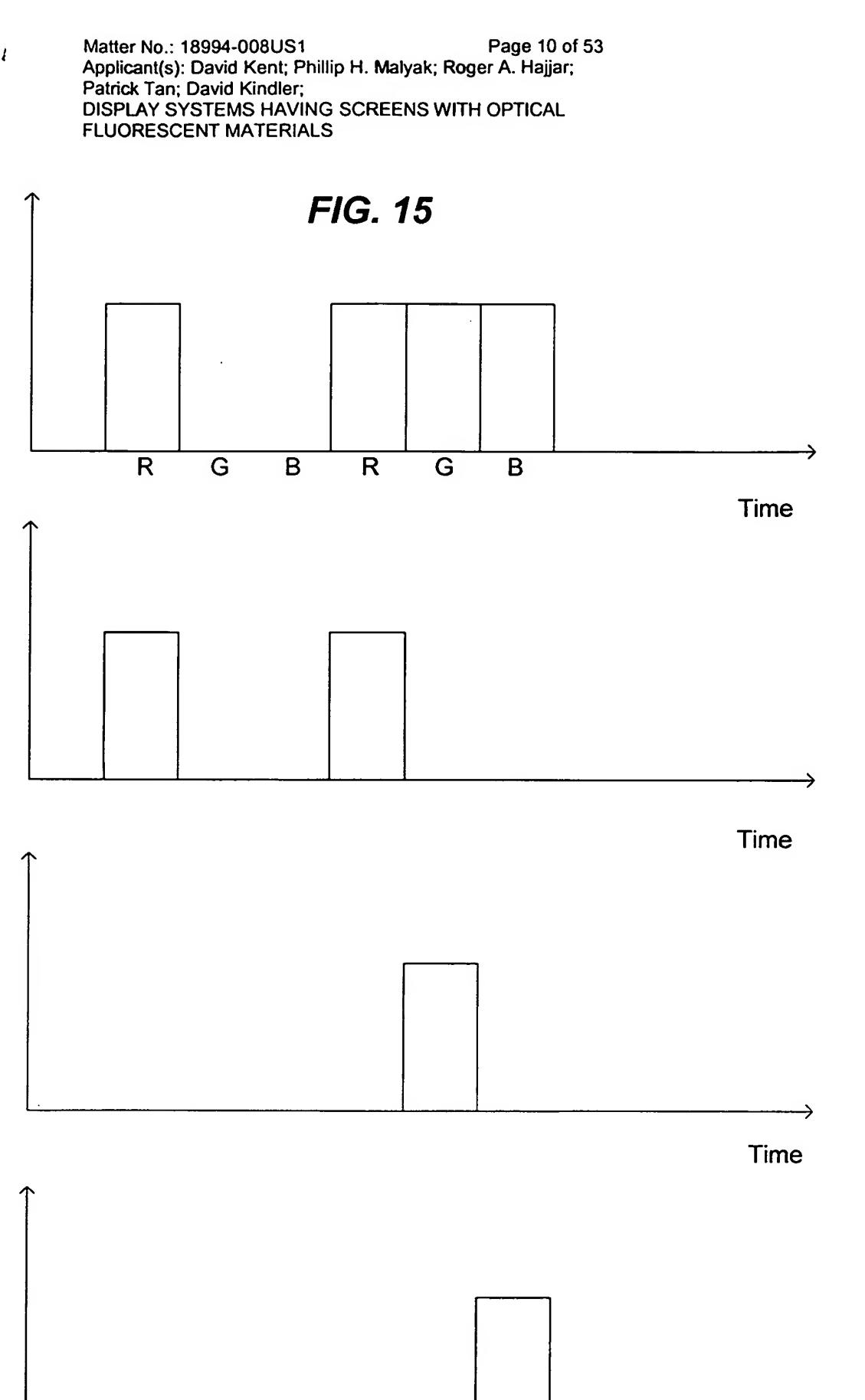


Image Pixel Signals

Red Detector

ctor

Green Dete

Blue Detector



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Patrick Tan; David Kindler;

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FIG. 16

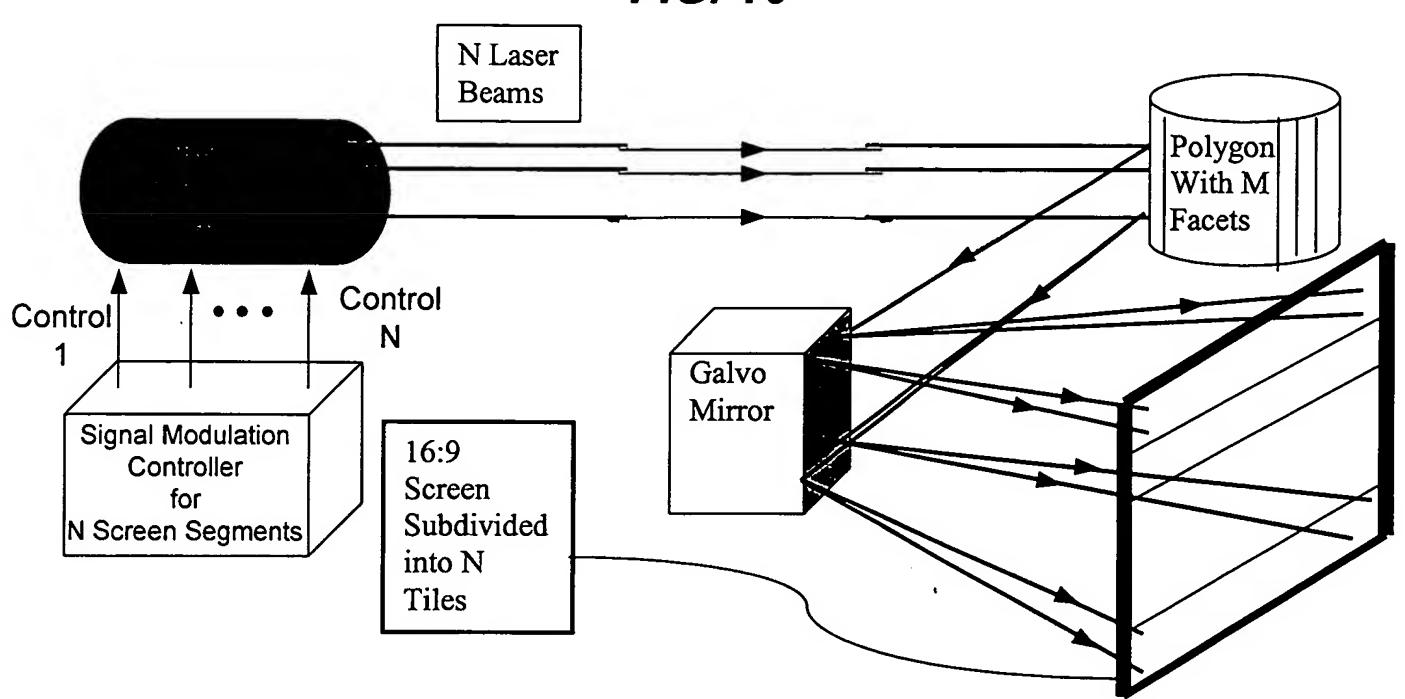
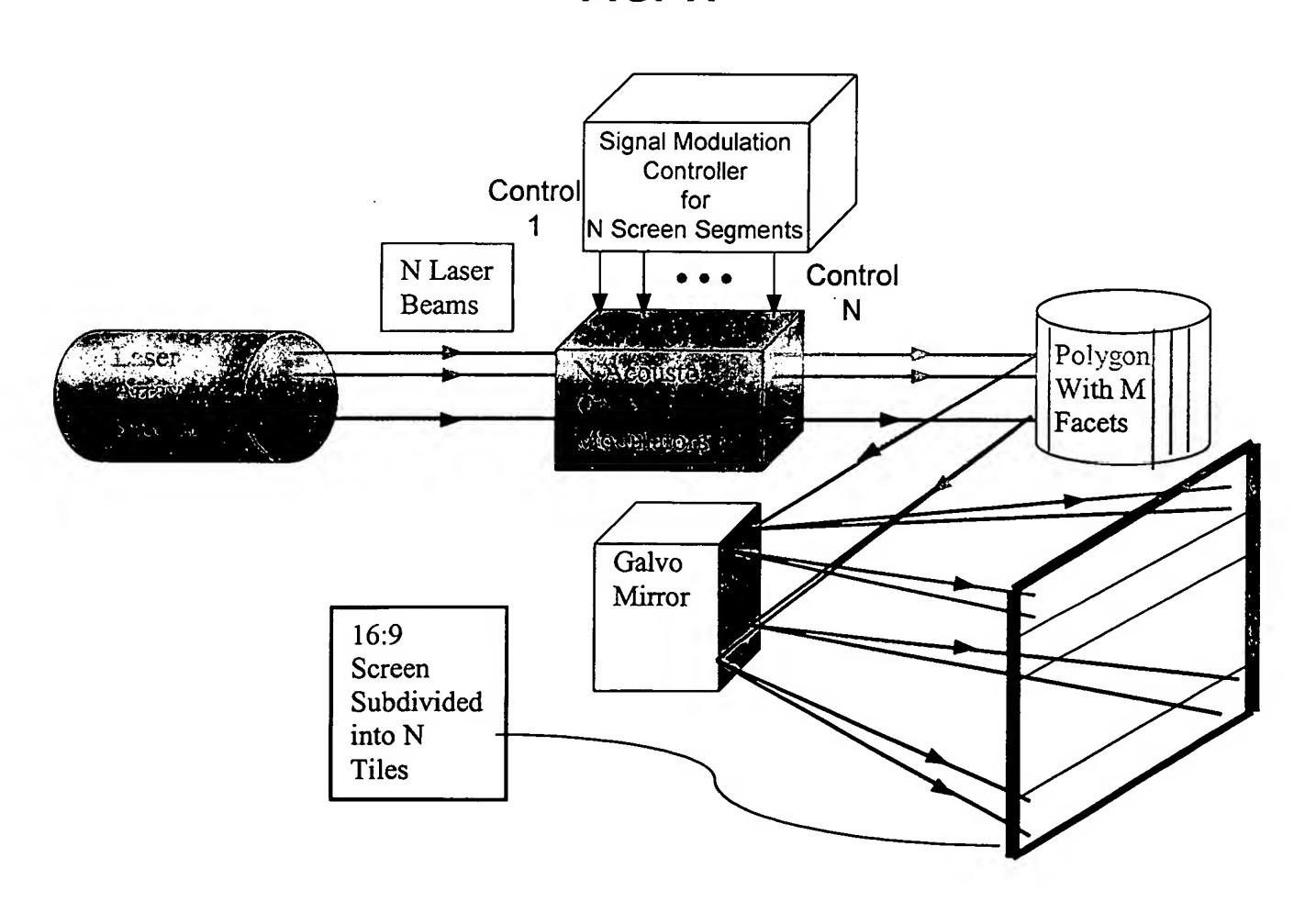


FIG. 17



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Patrick Tan; David Kindler;

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FIG. 18

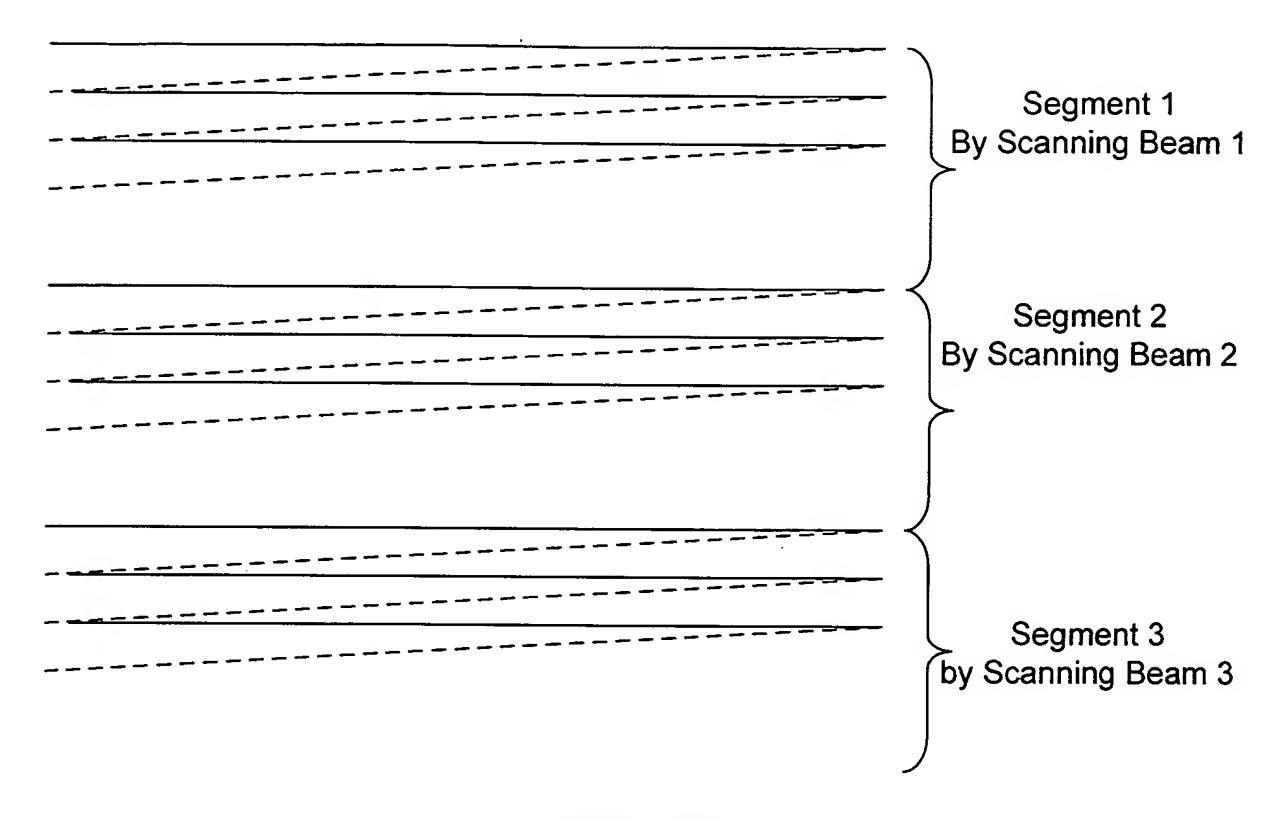
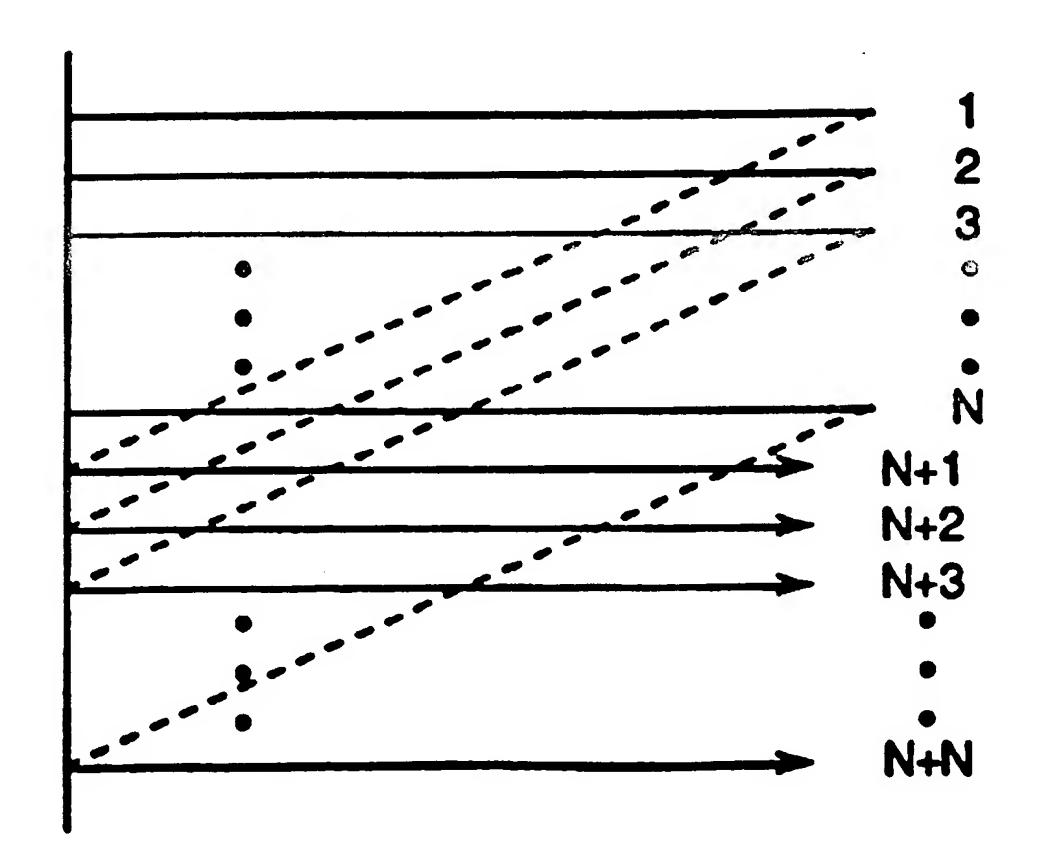
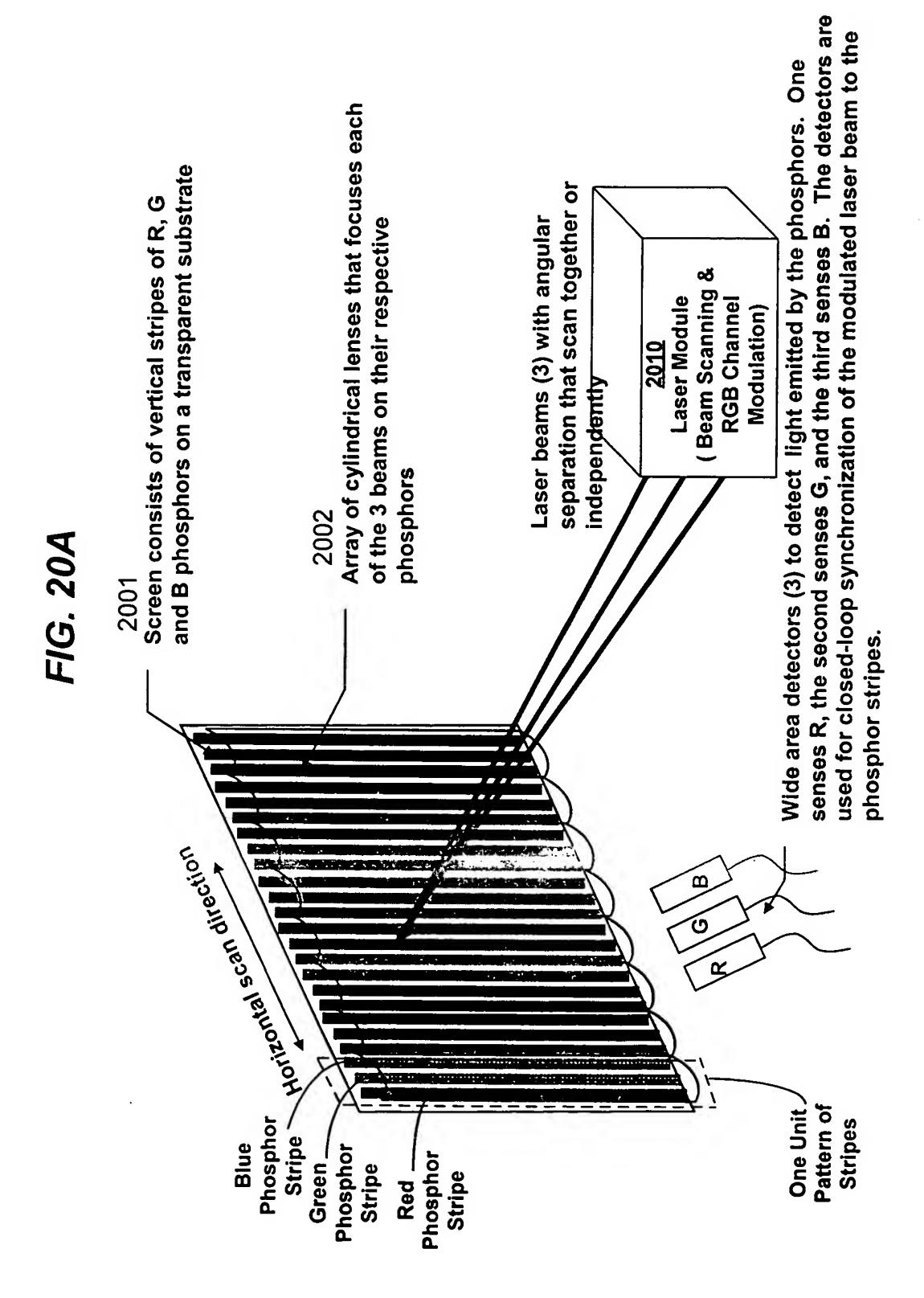


FIG. 19



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Patrick Tan; David Kindler;
DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL
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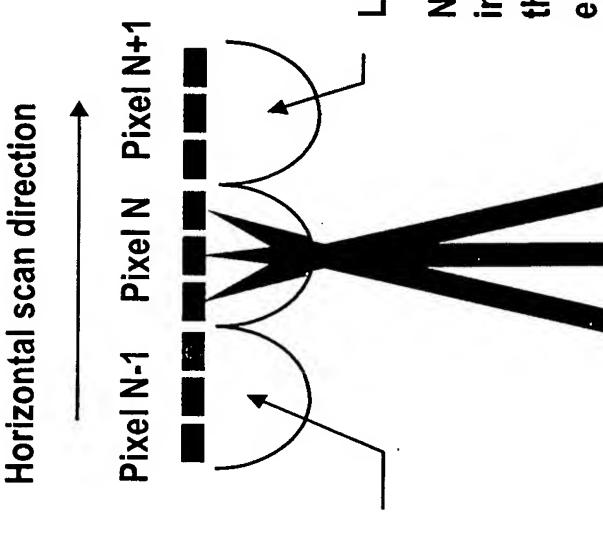
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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

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FIG. 20E



Lens array

R, G & B phosphor stripes (end

view)

Each color pixel includes

Note that the lenses may be tilted (tilt increases progressively toward the edges of the screen) to compensate for spot elongation that occurs with increasing incidence angle

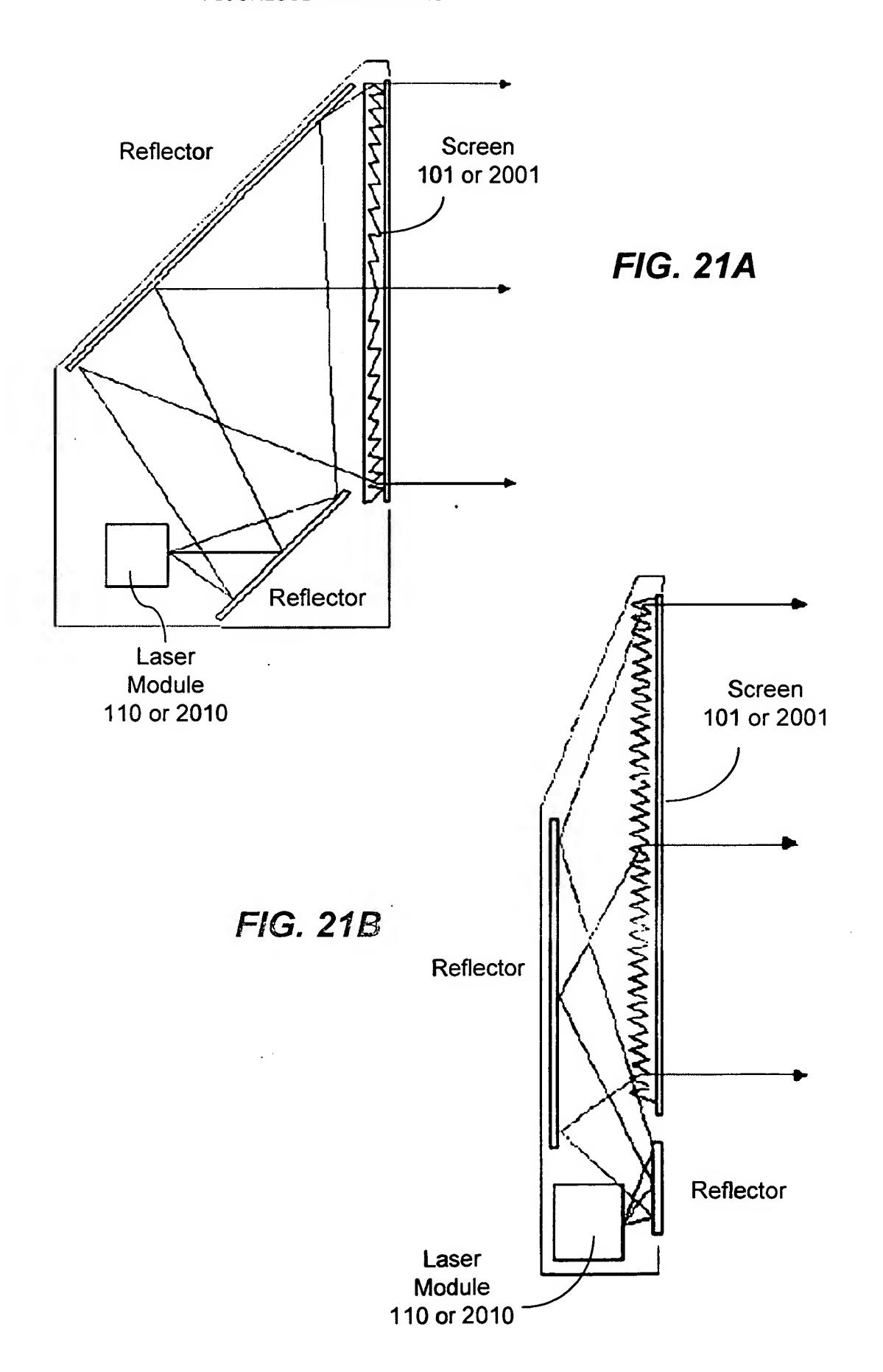
Laser beams (3) with angular separation that scan together or independently.

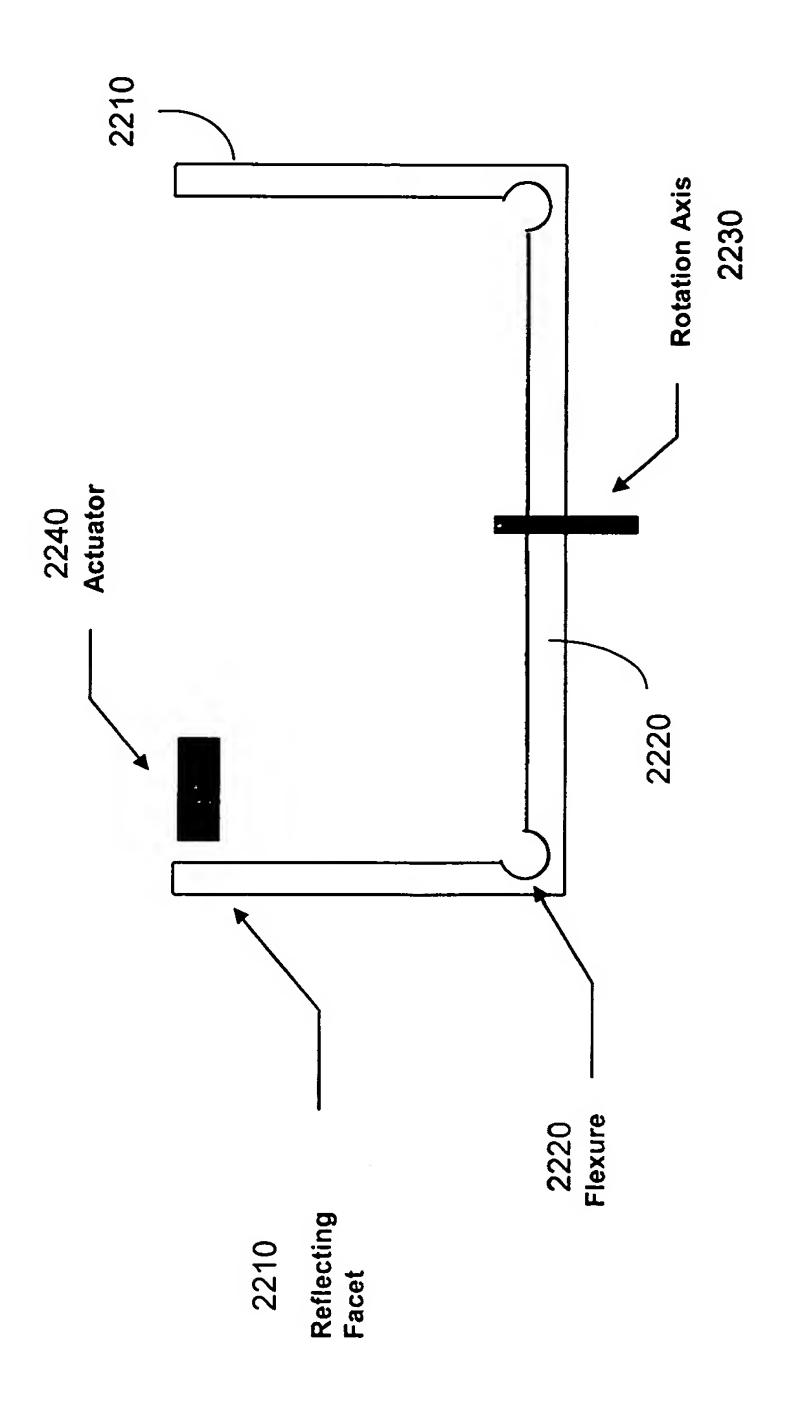
Each beam addresses a specific color phosphor

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Patrick Tan; David Kindler;

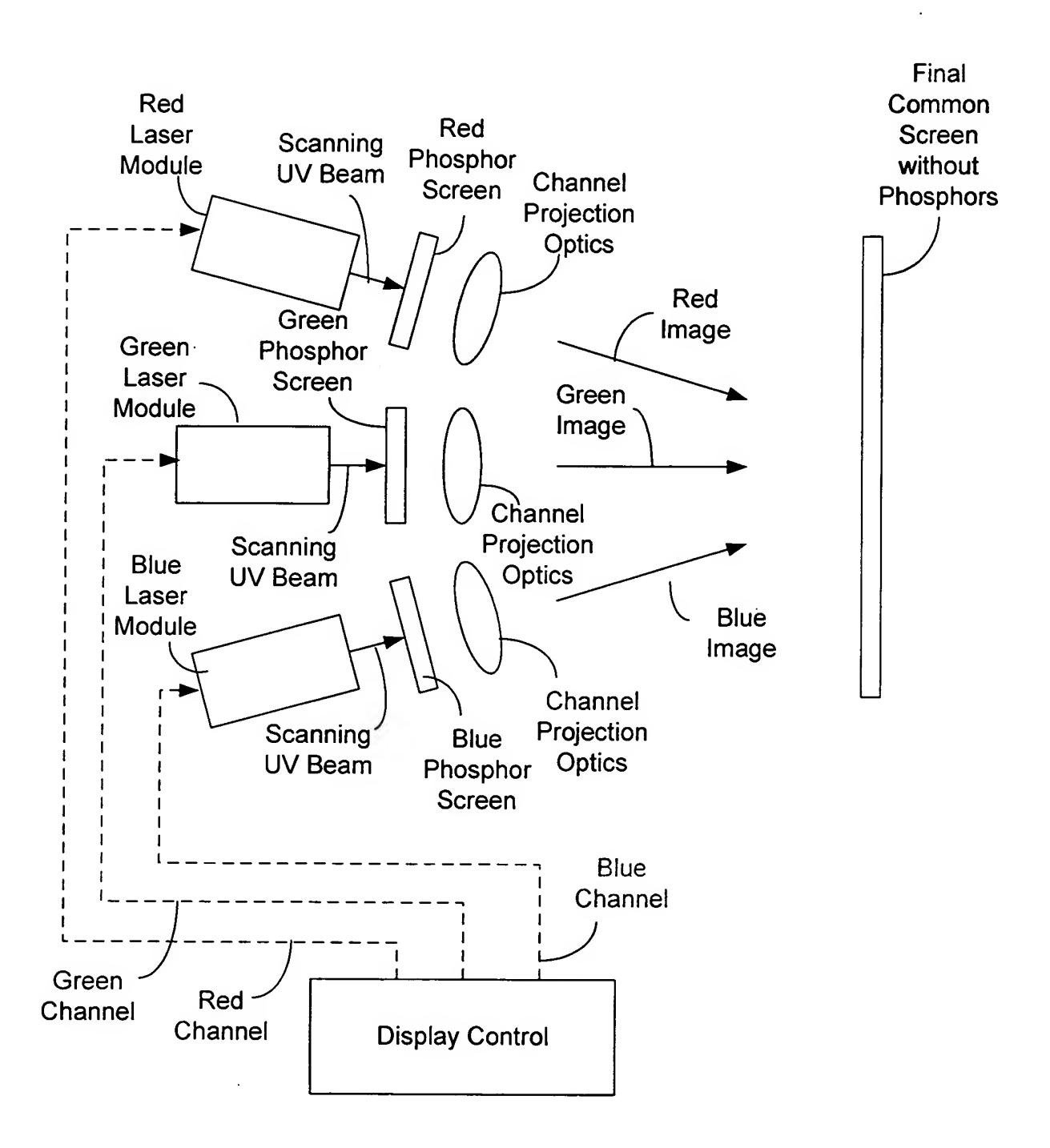
DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL





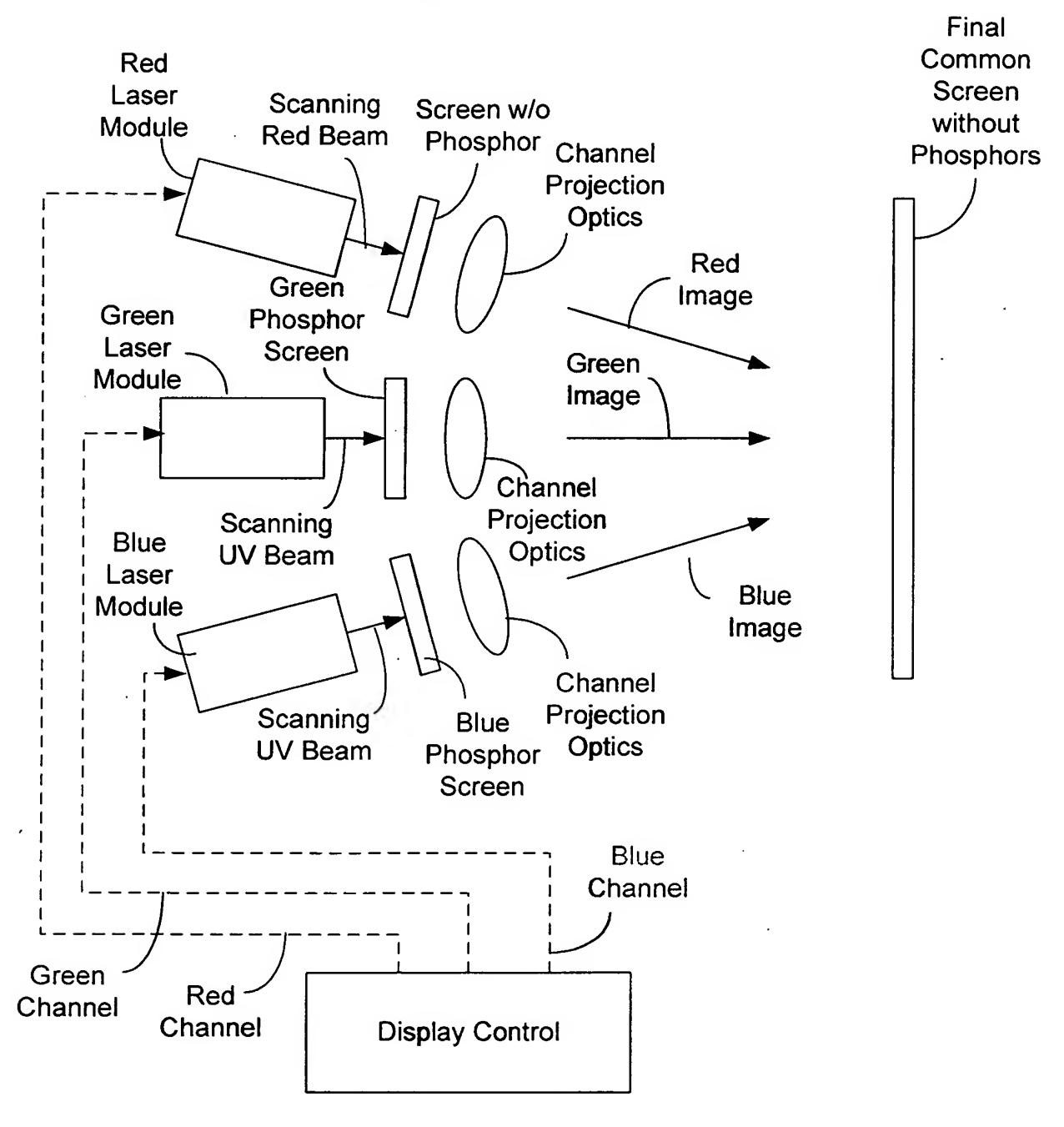
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FIG. 23



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Patrick Tan; David Kindler;
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FIG. 24A

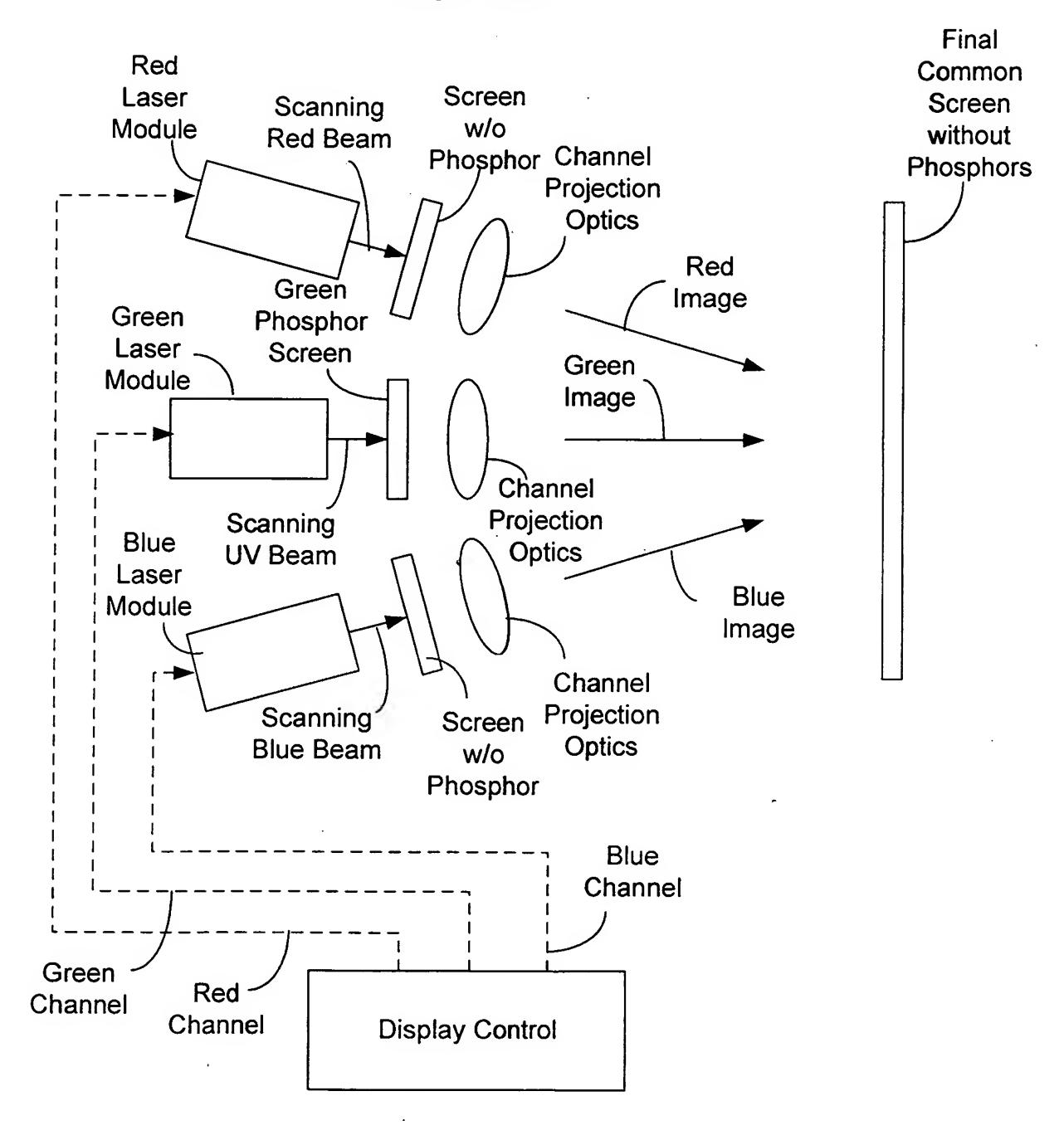


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Patrick Tan; David Kindler;

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FIG. 24B

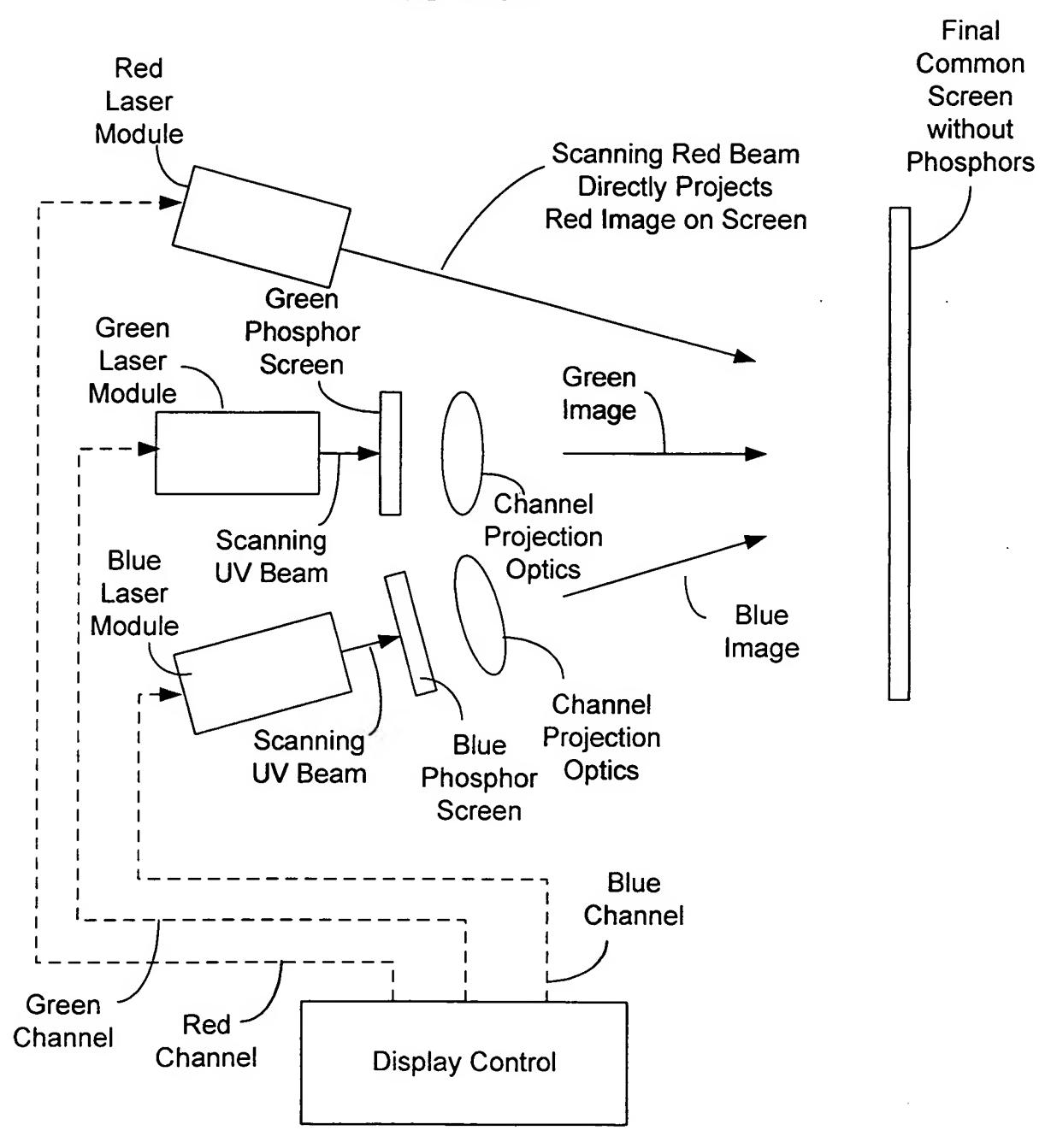


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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FIG. 25A

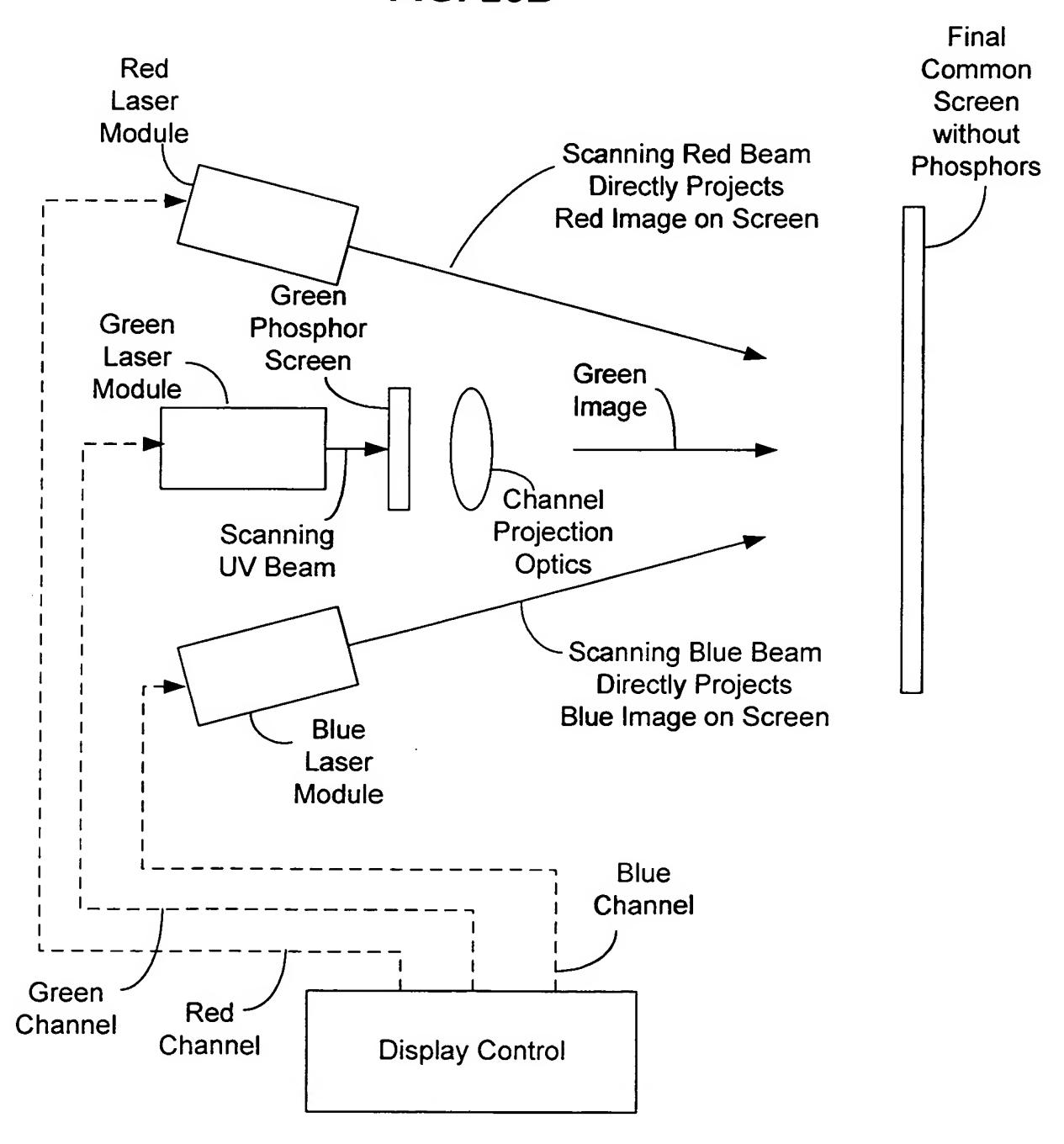


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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

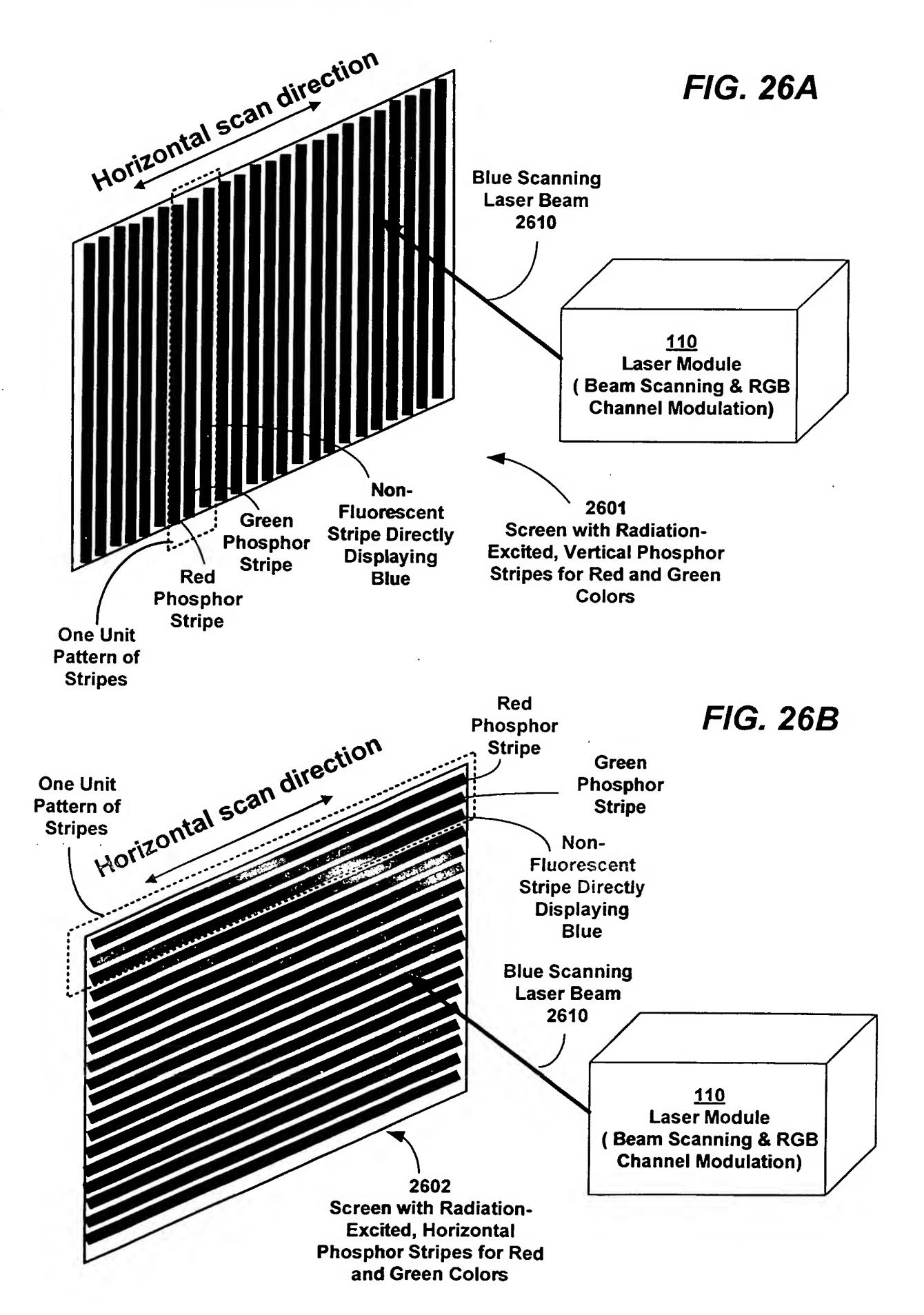
FIG. 25B



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Patrick Tan; David Kindler;

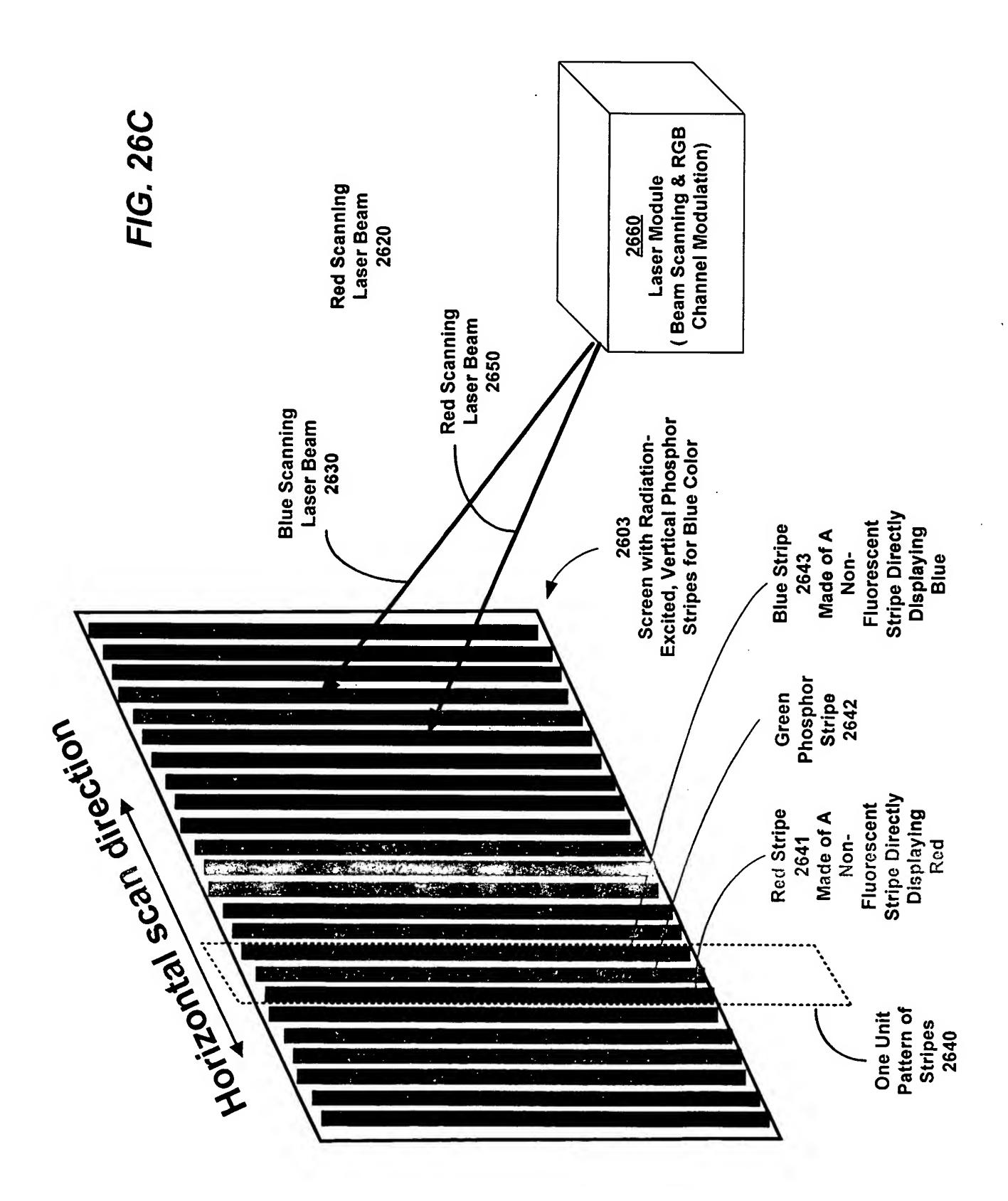
DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

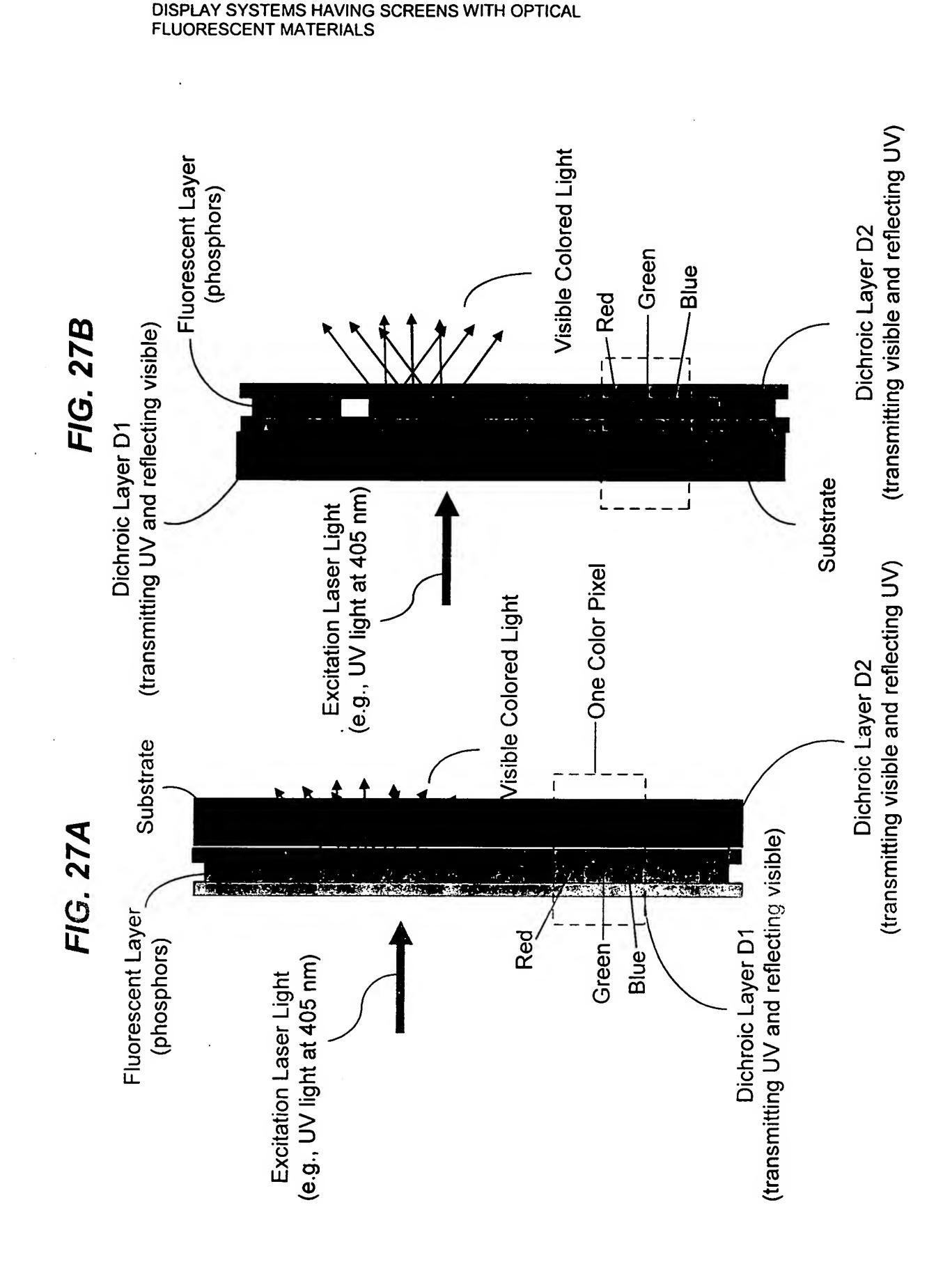


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Patrick Tan; David Kindler;

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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

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FIG. 27C

D1 - Characteristic

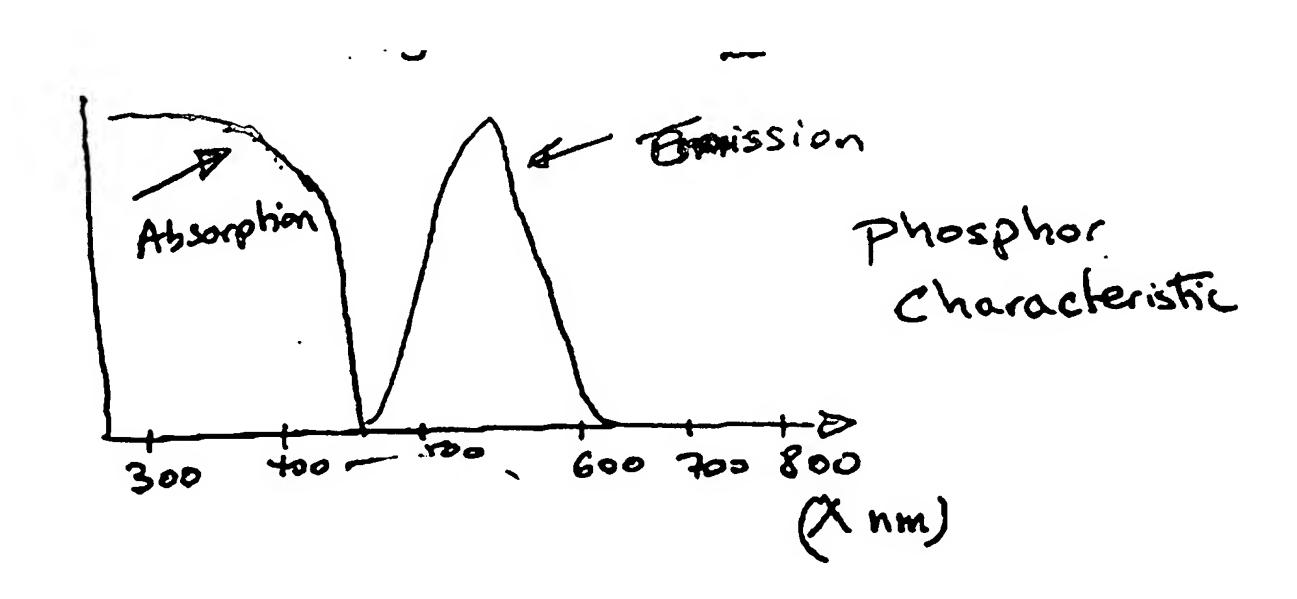
100%

T50%

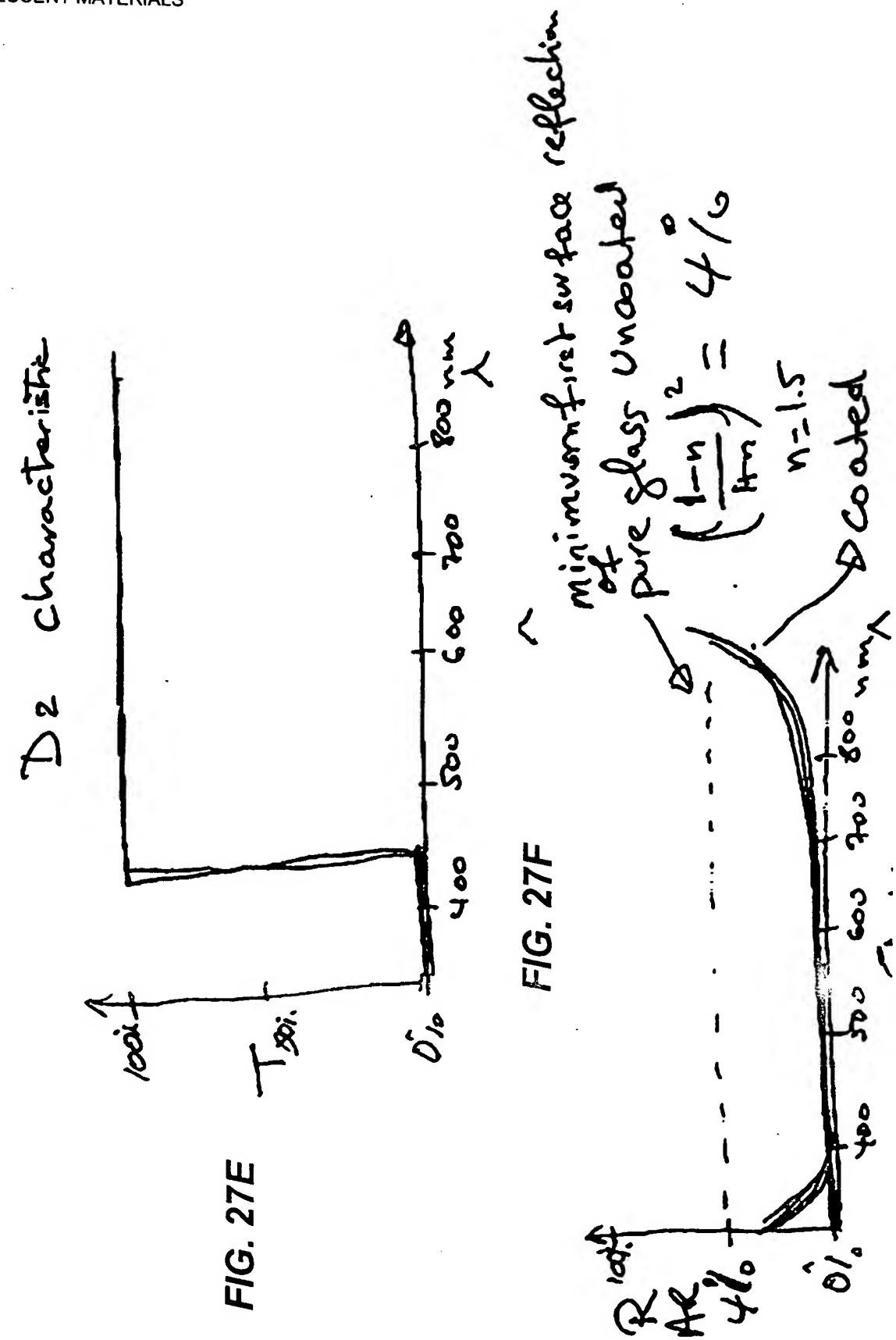
400 500 600 800 (mm)

FIG. 27D

Wavelength λ



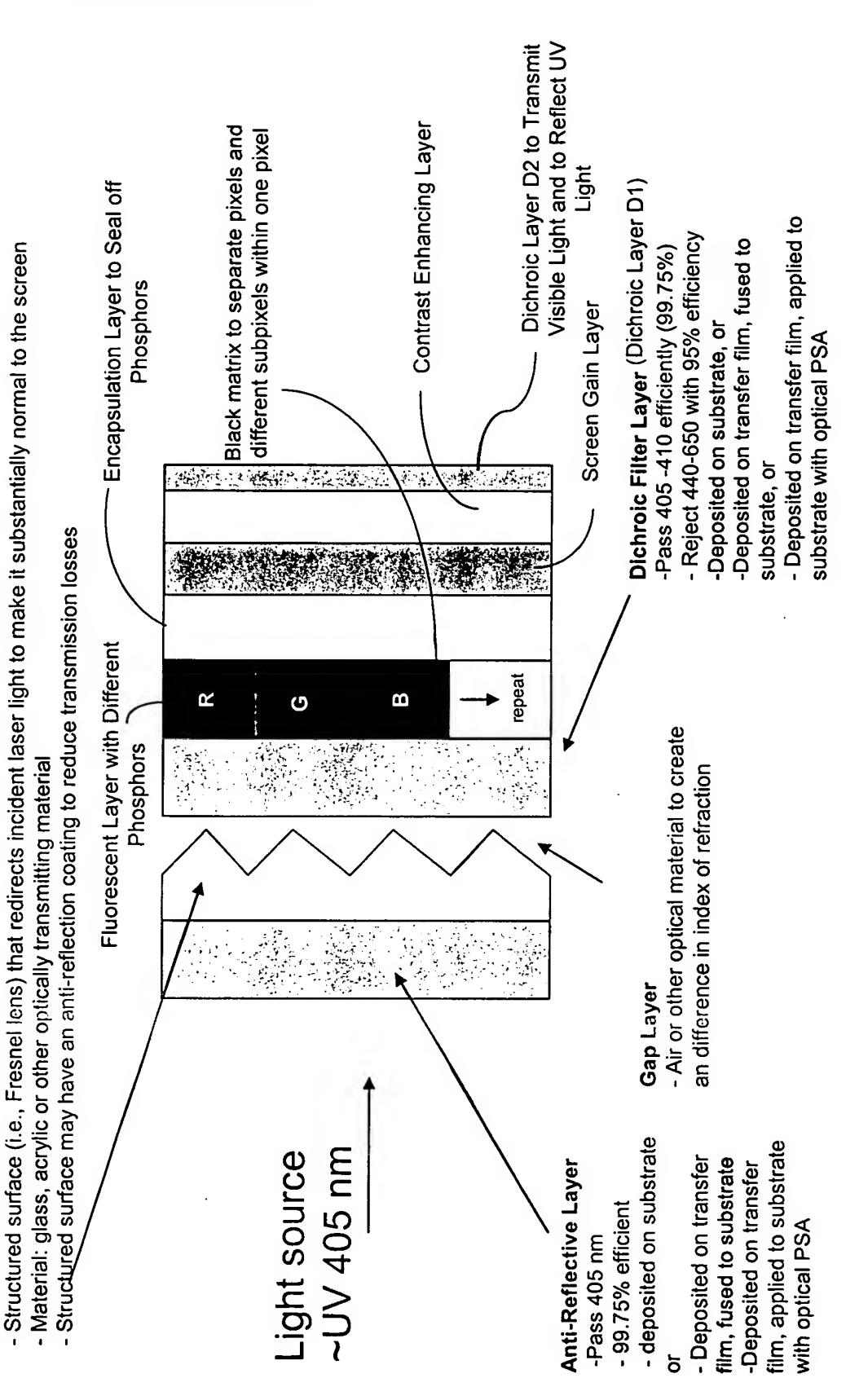
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Patrick Tan; David Kindler;

Substrate Layer

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL



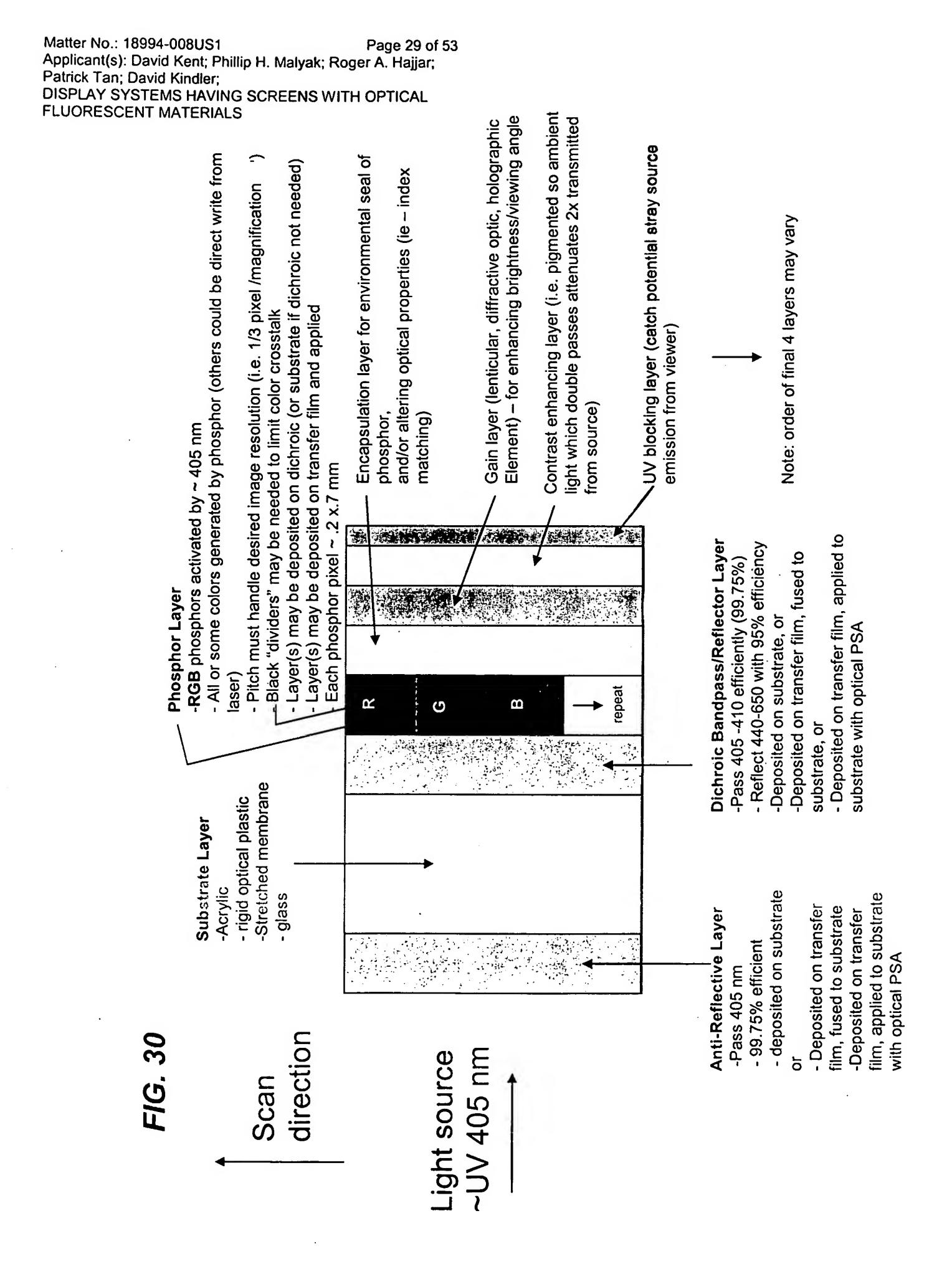
DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FLUORESCENT MATERIALS

Phosphor screen (see FIG. 28 hosphor screen (by The Fresnel lens spans the full area of the phosphor redirects indicent light and makes it normal to the pl Structure surface of Fresnel lens diffraction, refraction or both) Scanning Laser screen beam (2-axis scan)

for detailed construction)

Fresnel Lens: Functional Illustration



With Non-Overlapping Phosphor Multi-Layer Fluorescent Layer Regions in Different Layers Visible Light and to Reflect UV Dichroic Layer D2 to Transmit Contrast Enhancing Layer Different Phosphors Dividers between Screen Gain Layer Light - Deposited on transfer film, applied to - Reject 440-650 with 95% efficiency -Deposited on transfer film, fused to -Pass 405 -410 efficiently (99.75%) * **建设** --Deposited on substrate, or Phosphor substrate with optical PSA Region Dichroic Filter Layer $\mathbf{\omega}$ 9 substrate, or R Phosphor Region -Stretched membrane Phosphor plastic Regio Non-Phosphor Region Non-Substrate Layer - rigid optical -Acrylic - glass - deposited on substrate film, applied to substrate with optical PSA - Deposited on transfer film, fused to substrate -Deposited on transfer Anti-Reflective Layer - 99.75% efficient -Pass 405 nm ~UV 405 nm Light source Ö FIG. 31

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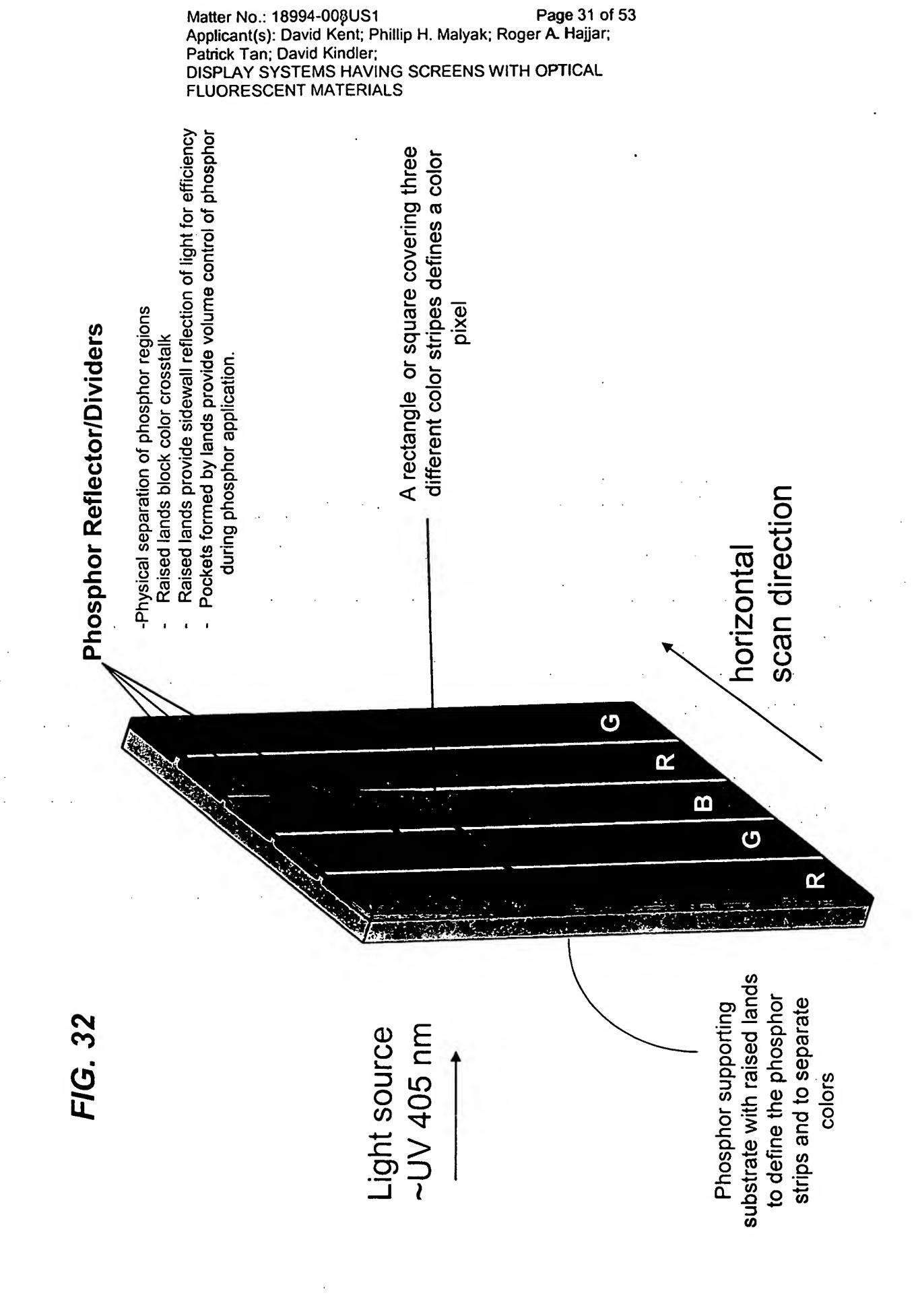
Matter No.: 18994-008US1

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FLUORESCENT MATERIALS

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DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL



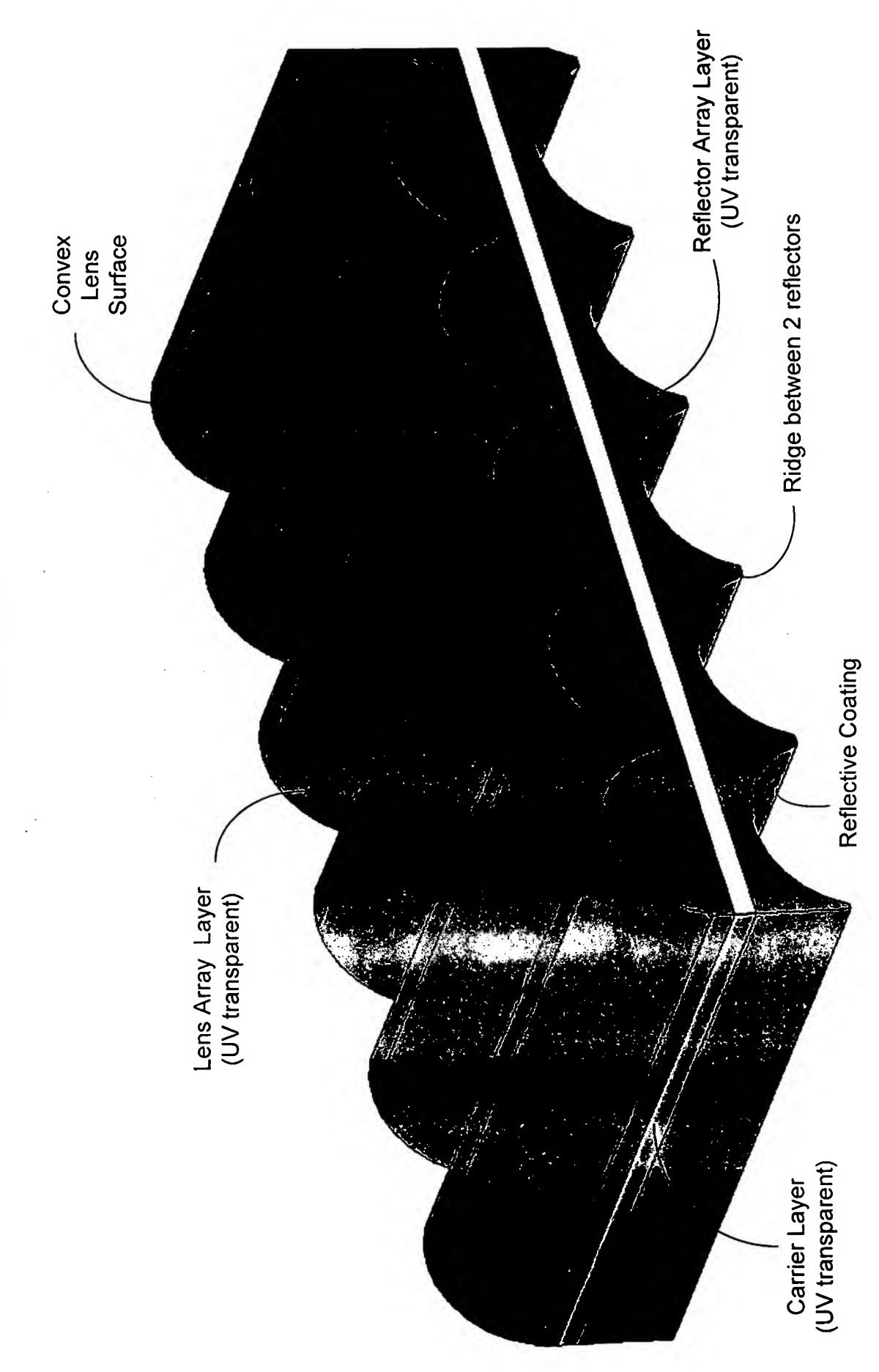
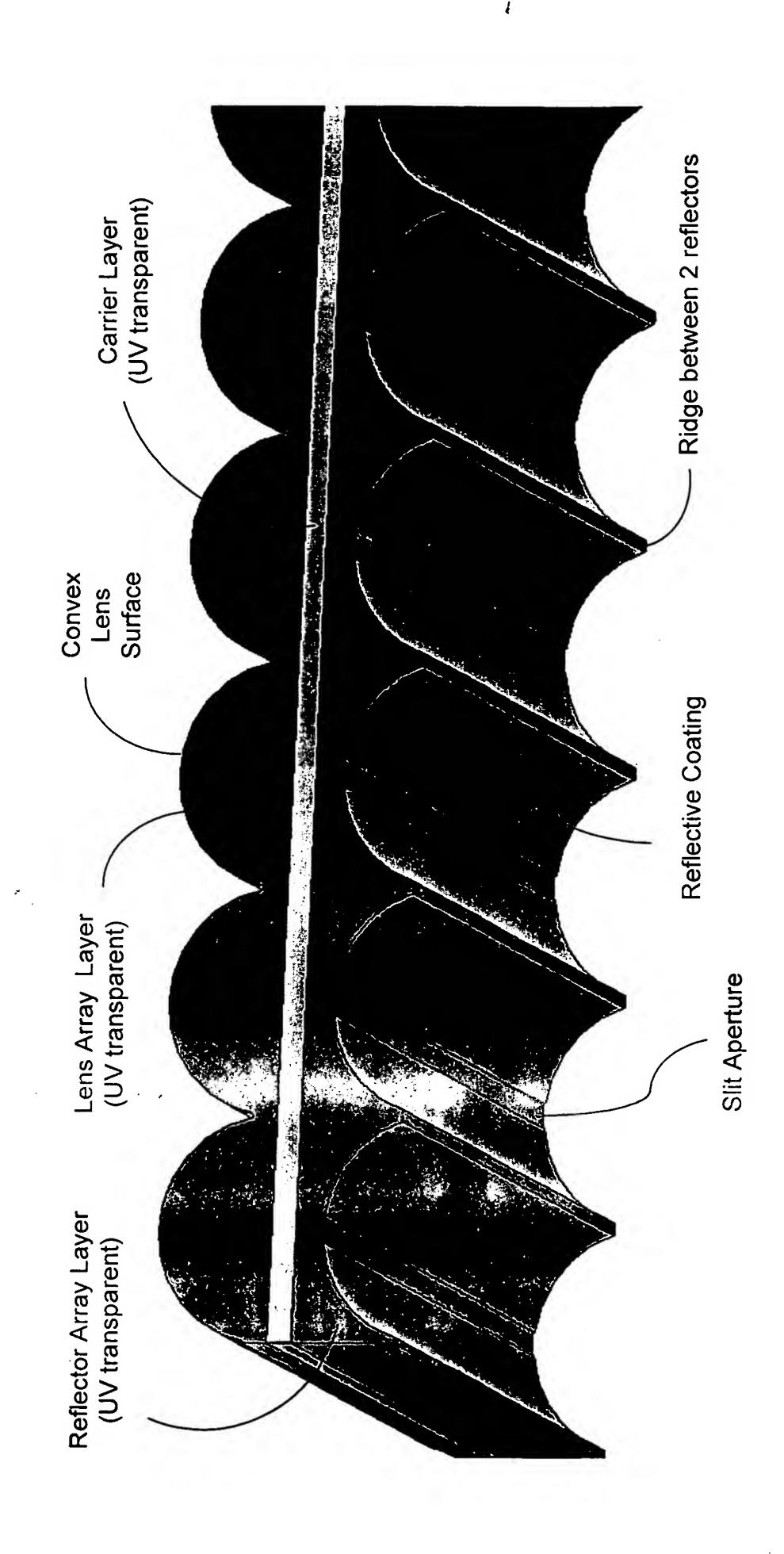


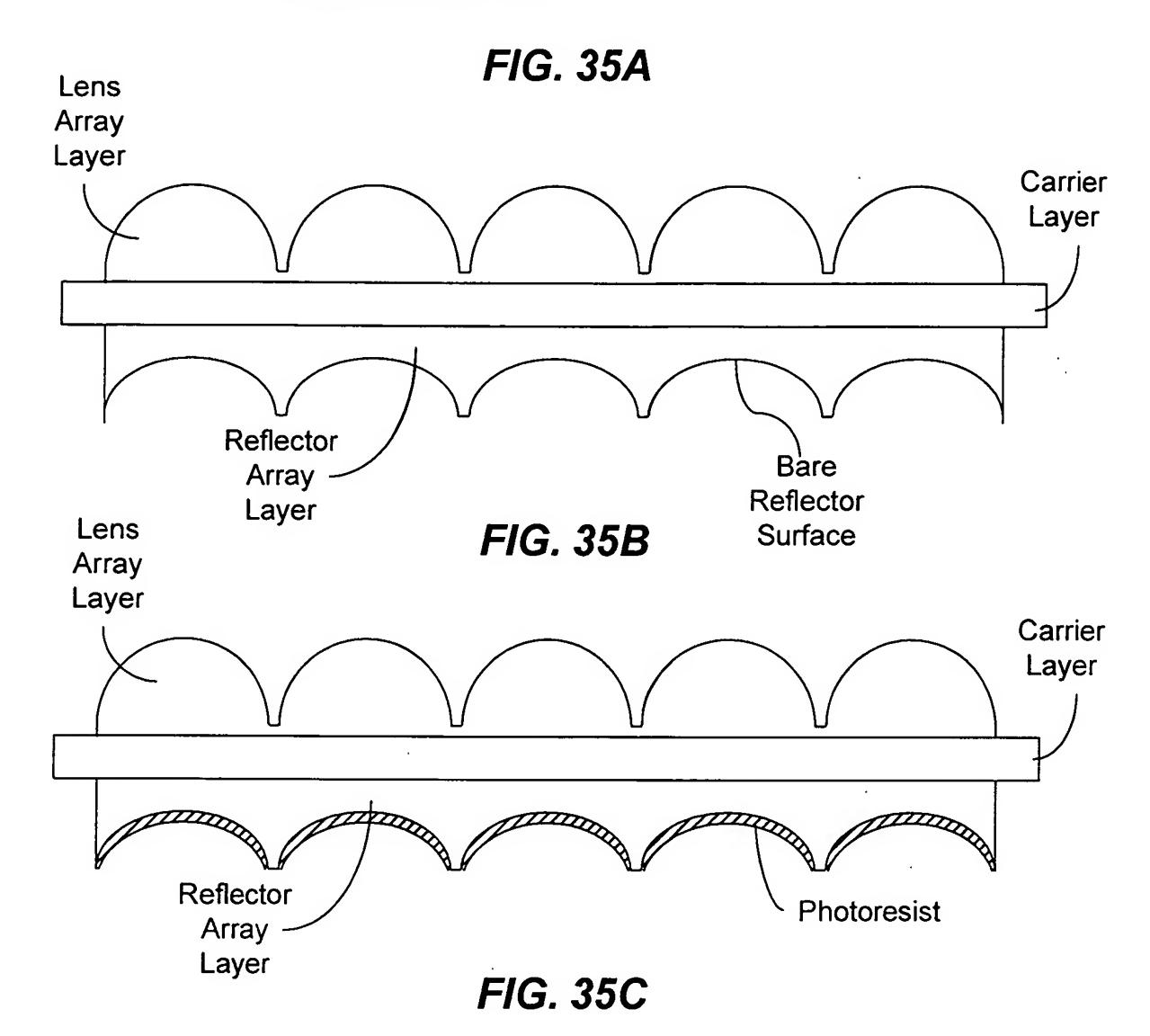
FIG. 34A

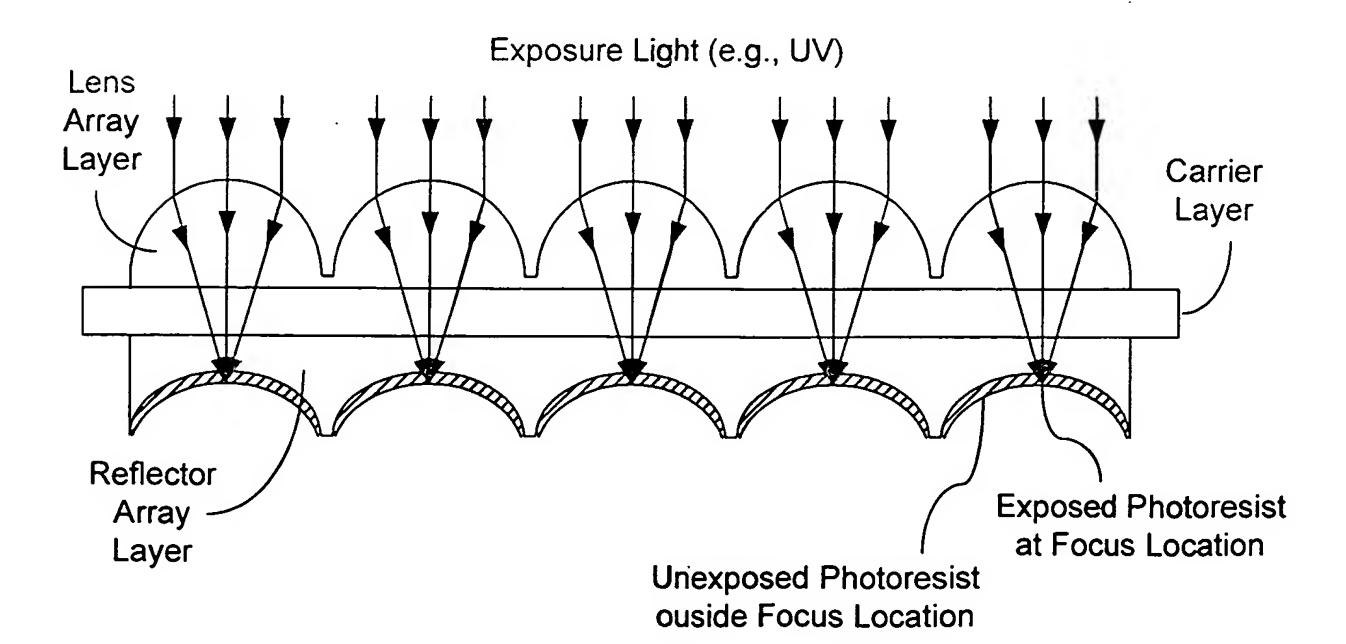


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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL





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Applicant(s): David Kent; Phillip H. Malyak; Roger A. Hajjar;
Patrick Tan; David Kindler;
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FIG. 35D

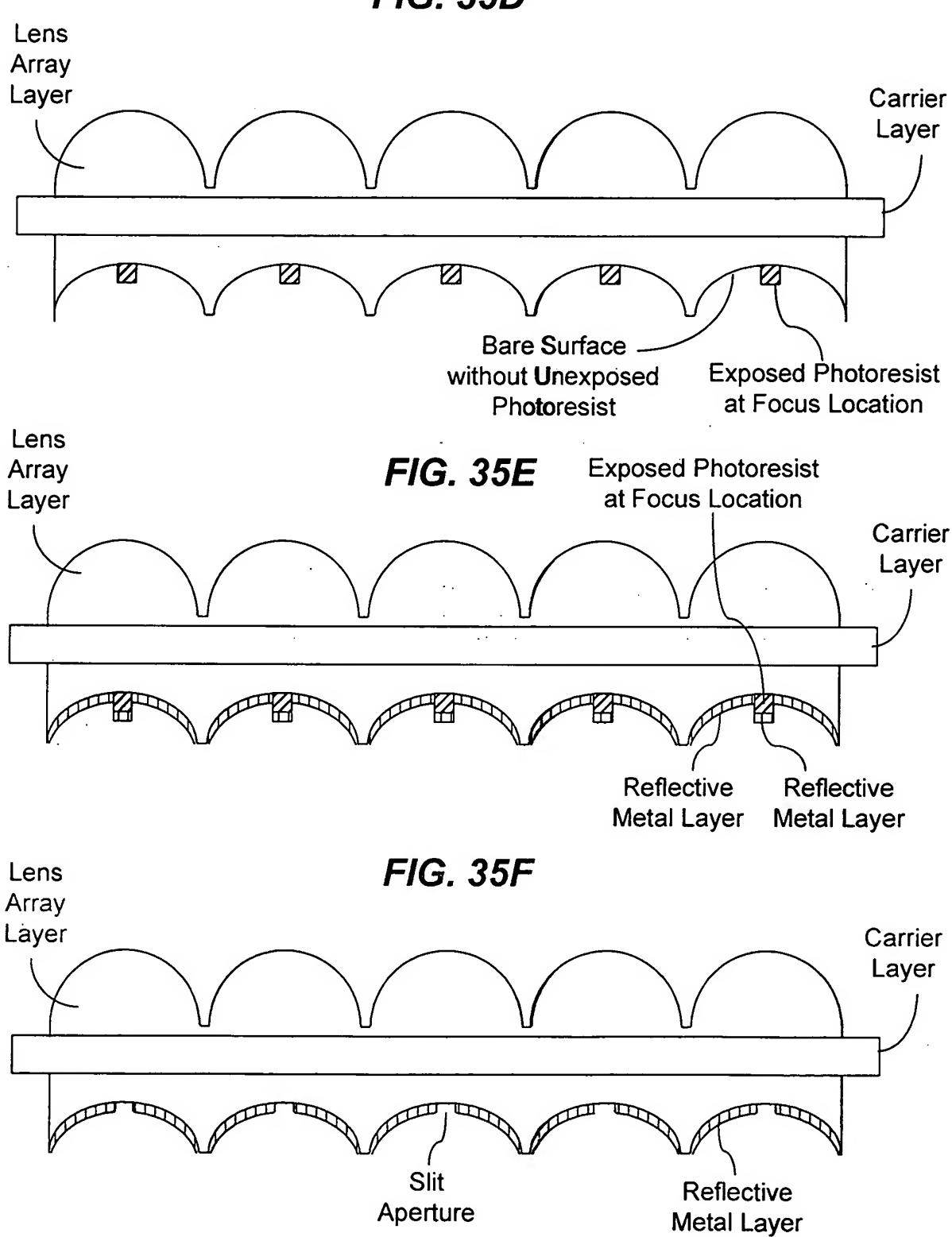
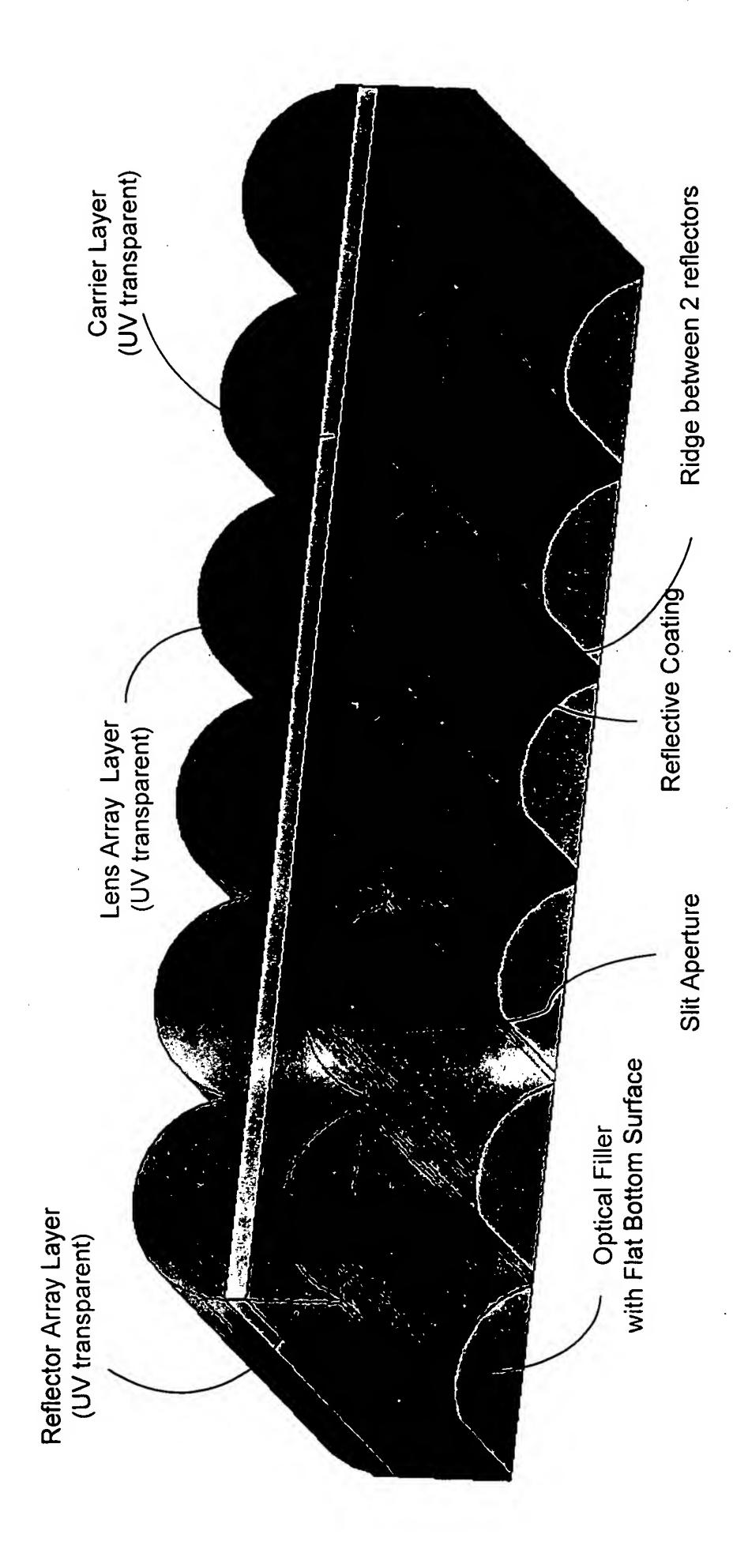
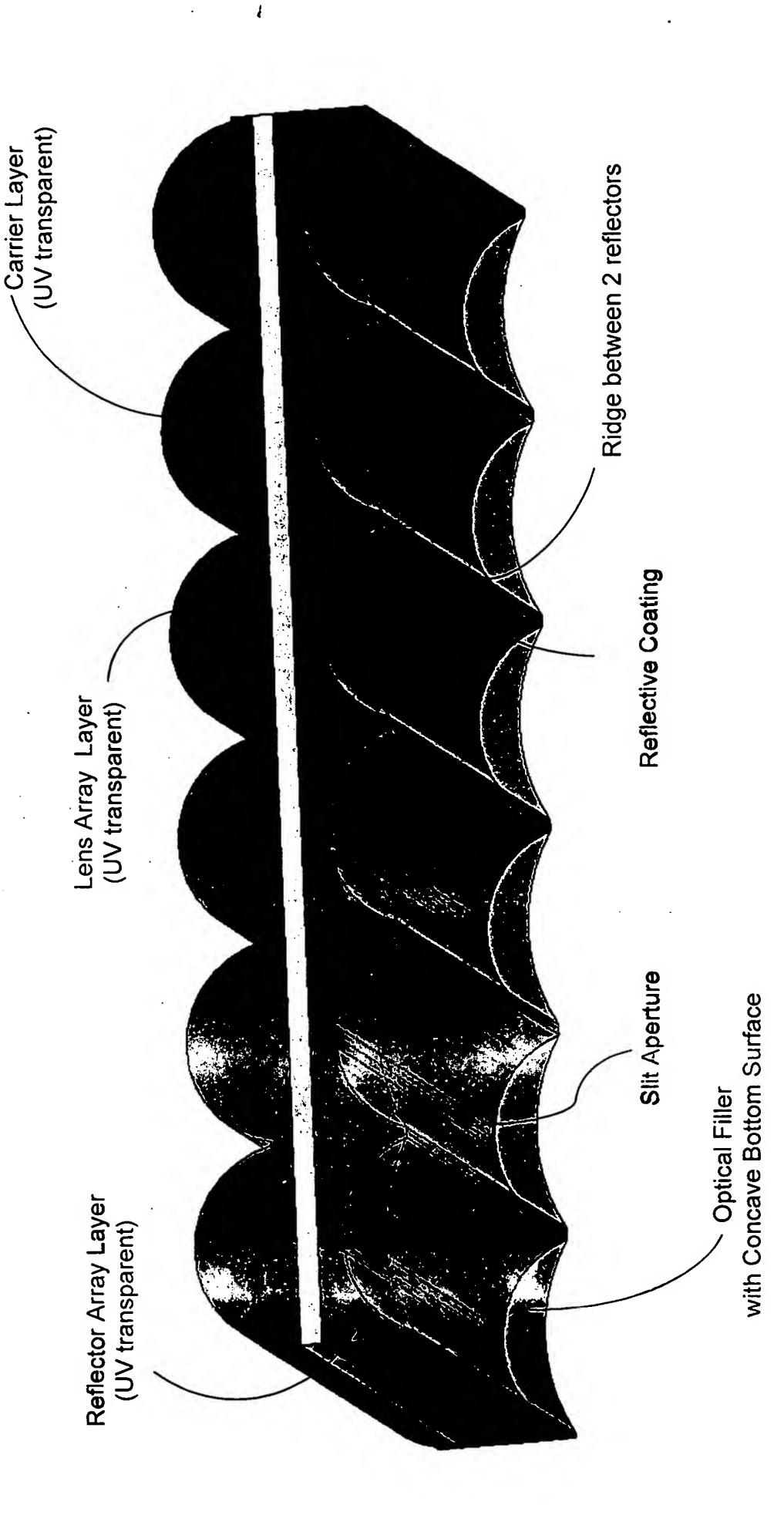
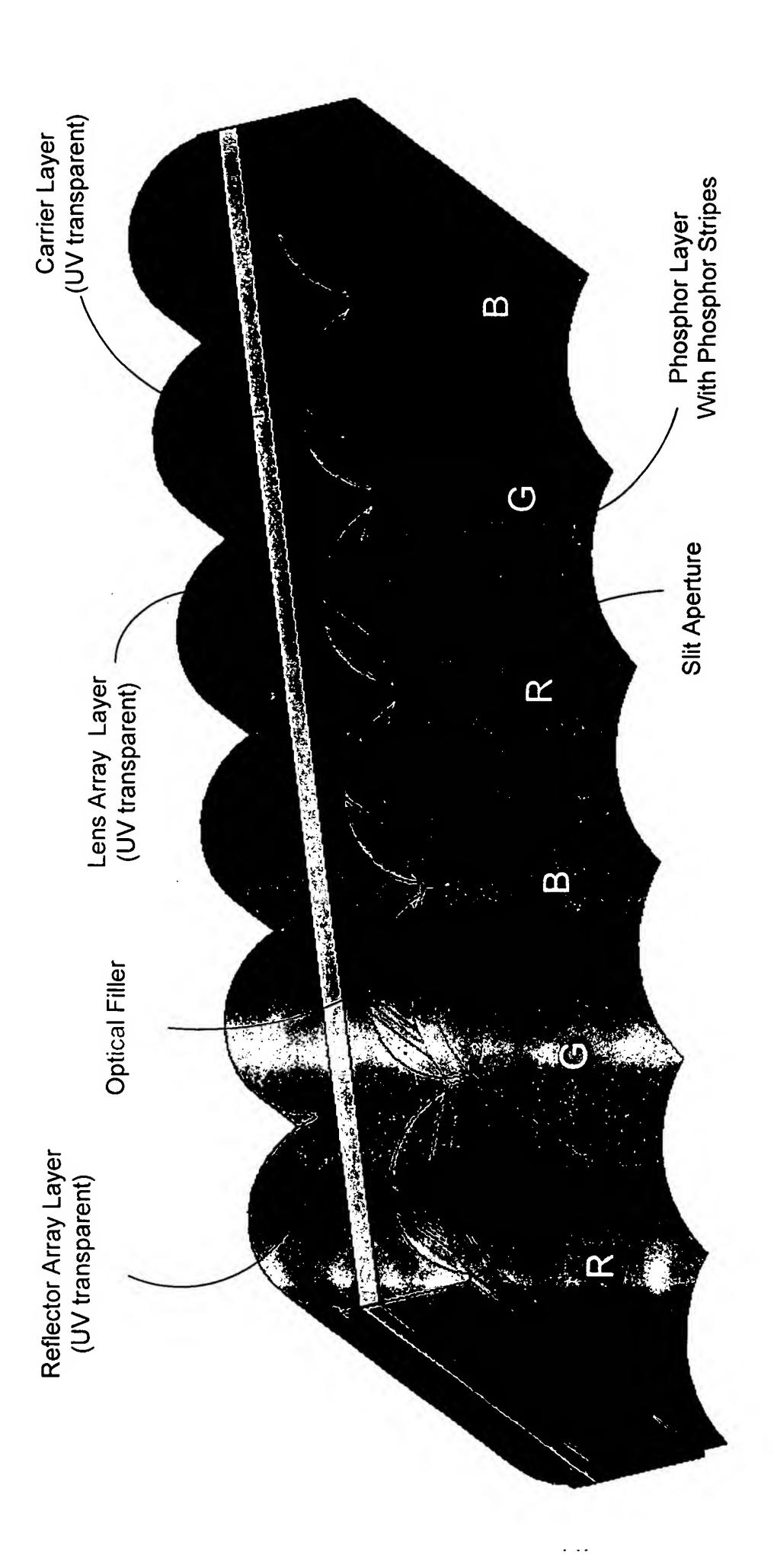


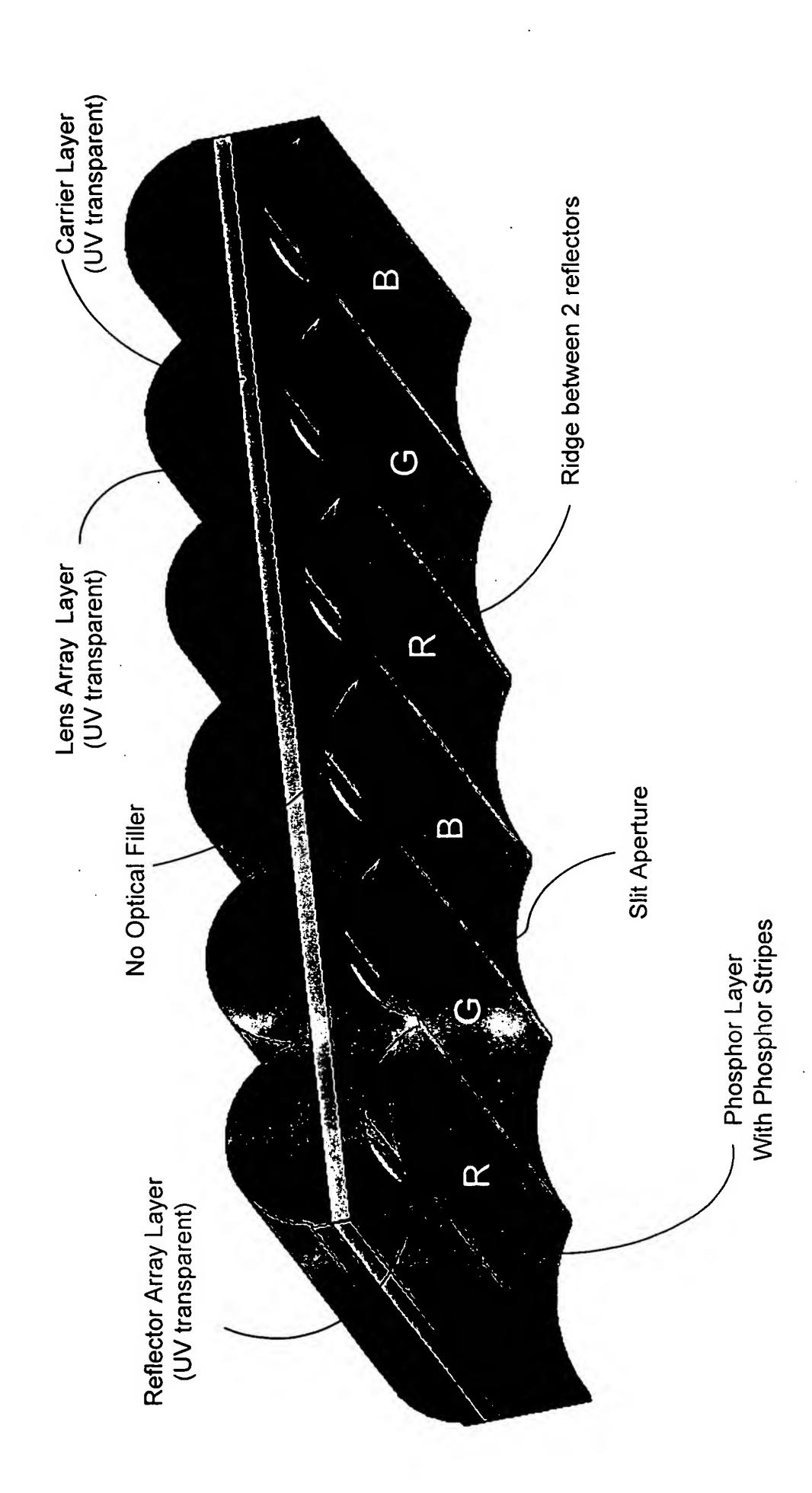
FIG. 36

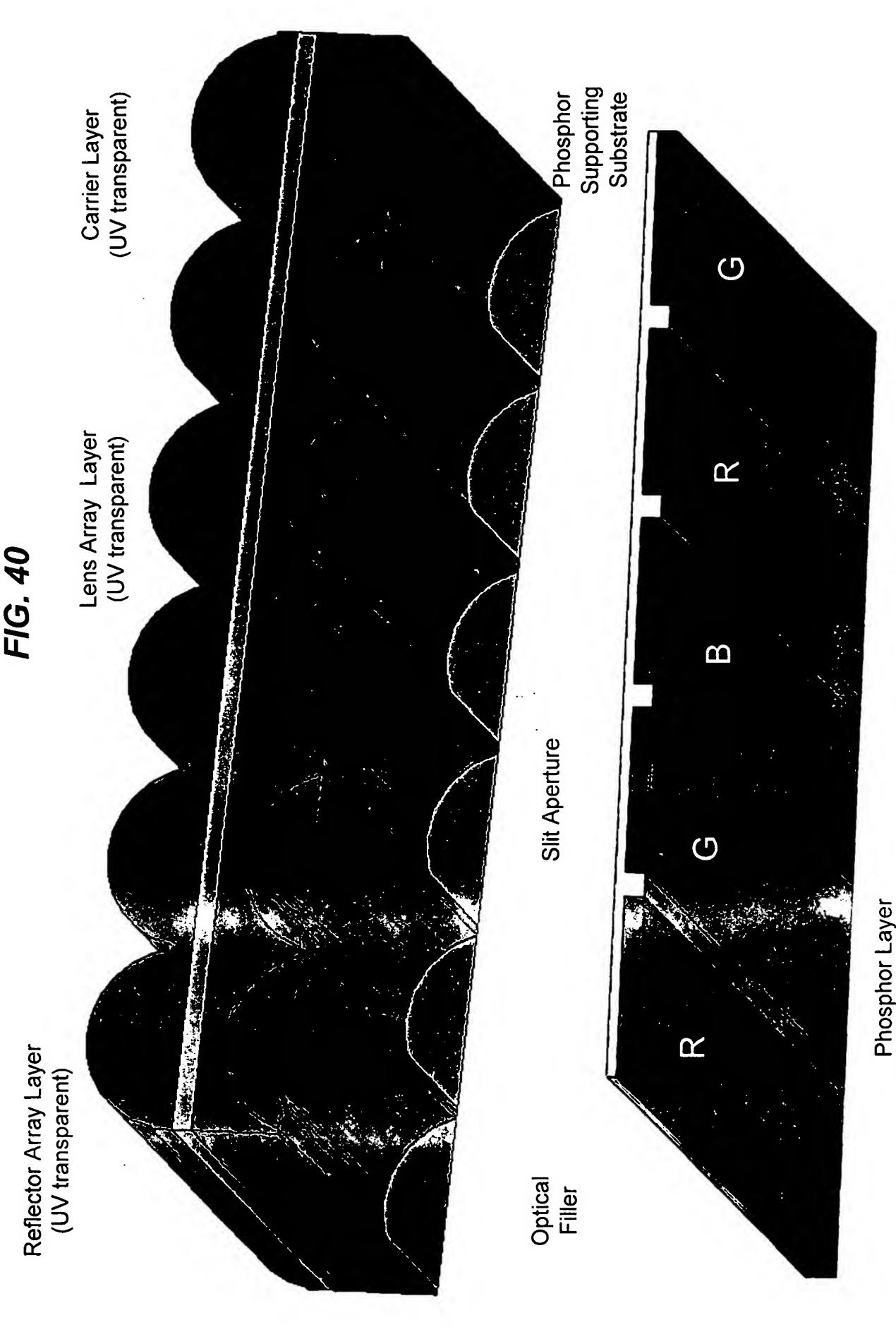






•





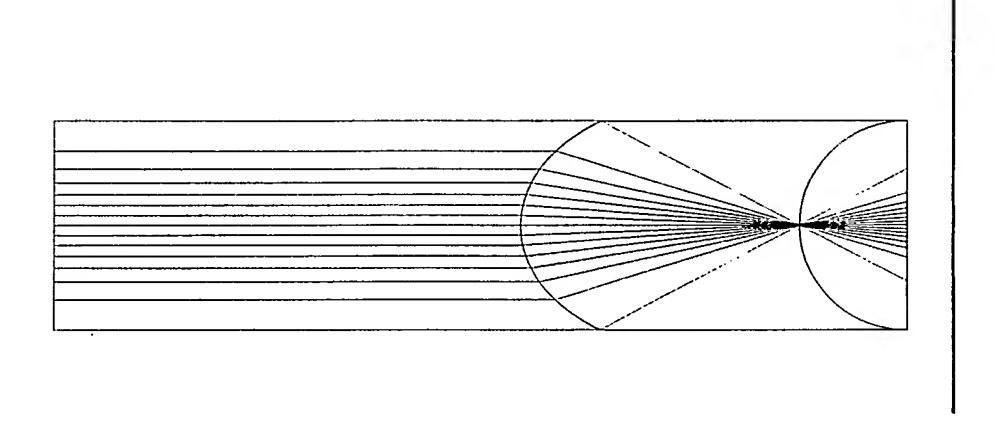
Phosphor Layer With Phosphor Stripes

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DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

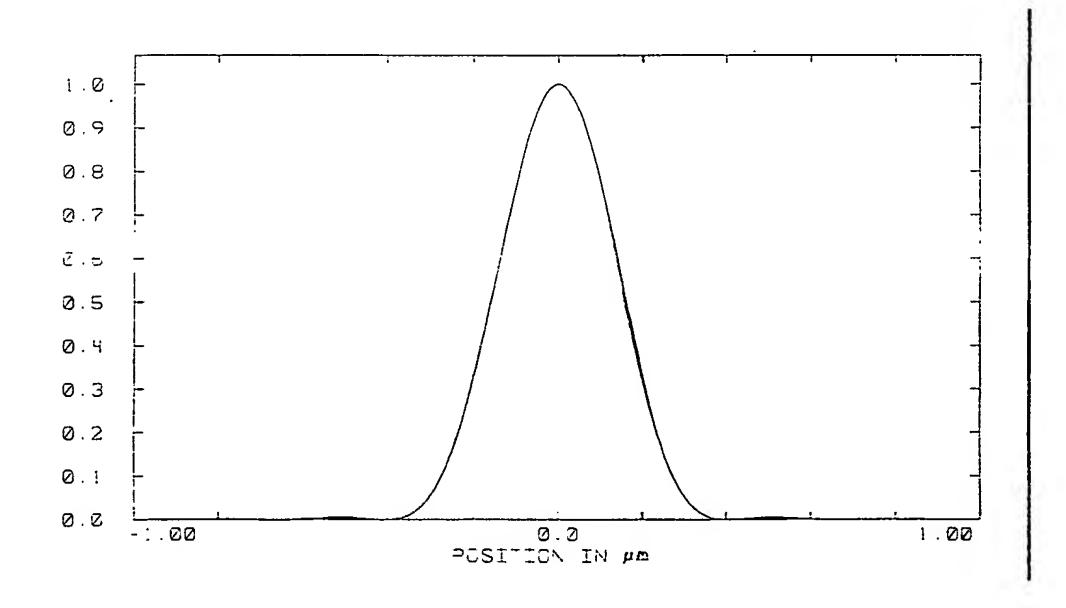
FLUORESCENT MATERIALS

FIG. 41A



Subpixel with hemispherical Reflector

FIG. 41B



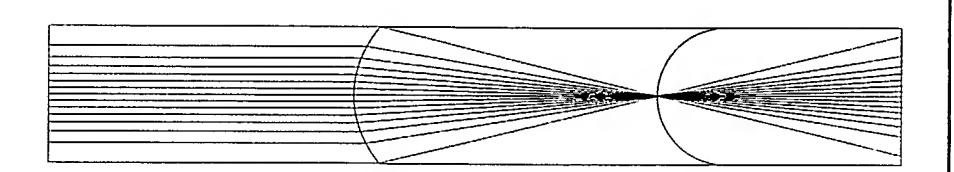
Subpixel with hemispherical Reflector

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Patrick Tan; David Kindler;
DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

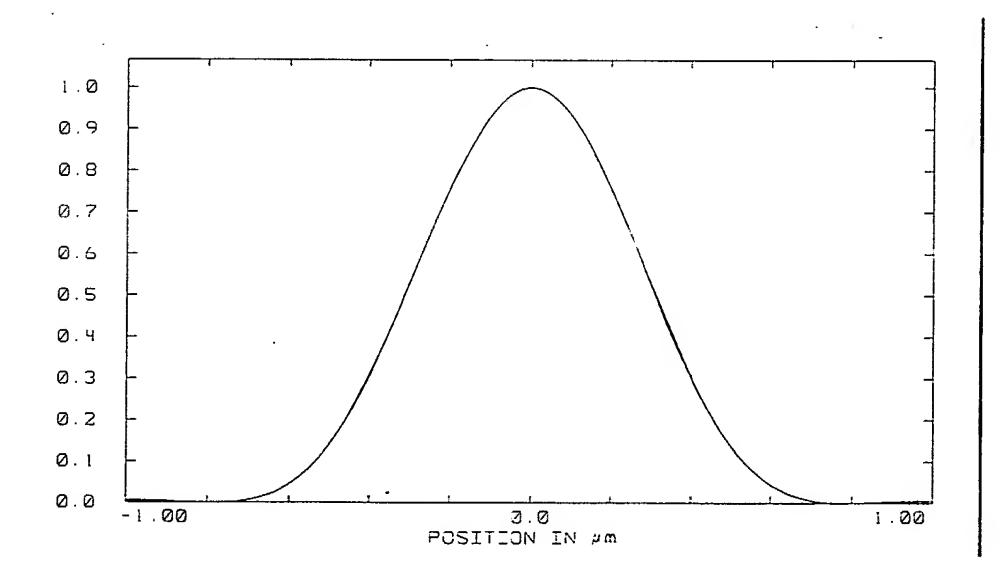
FLUORESCENT MATERIALS

FIG. 42A

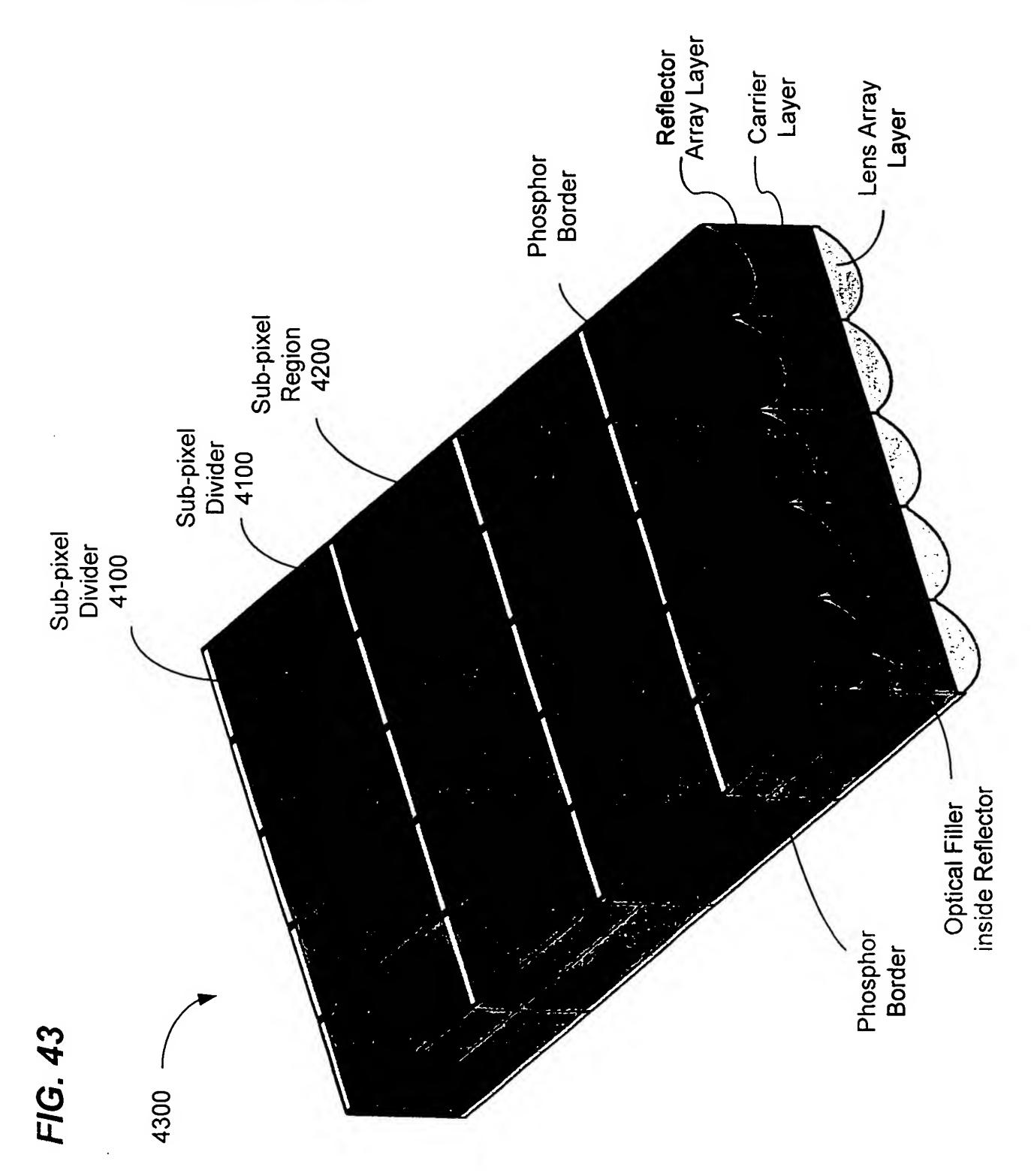


Subpixel with hemispherical Reflector

FIG. 42B



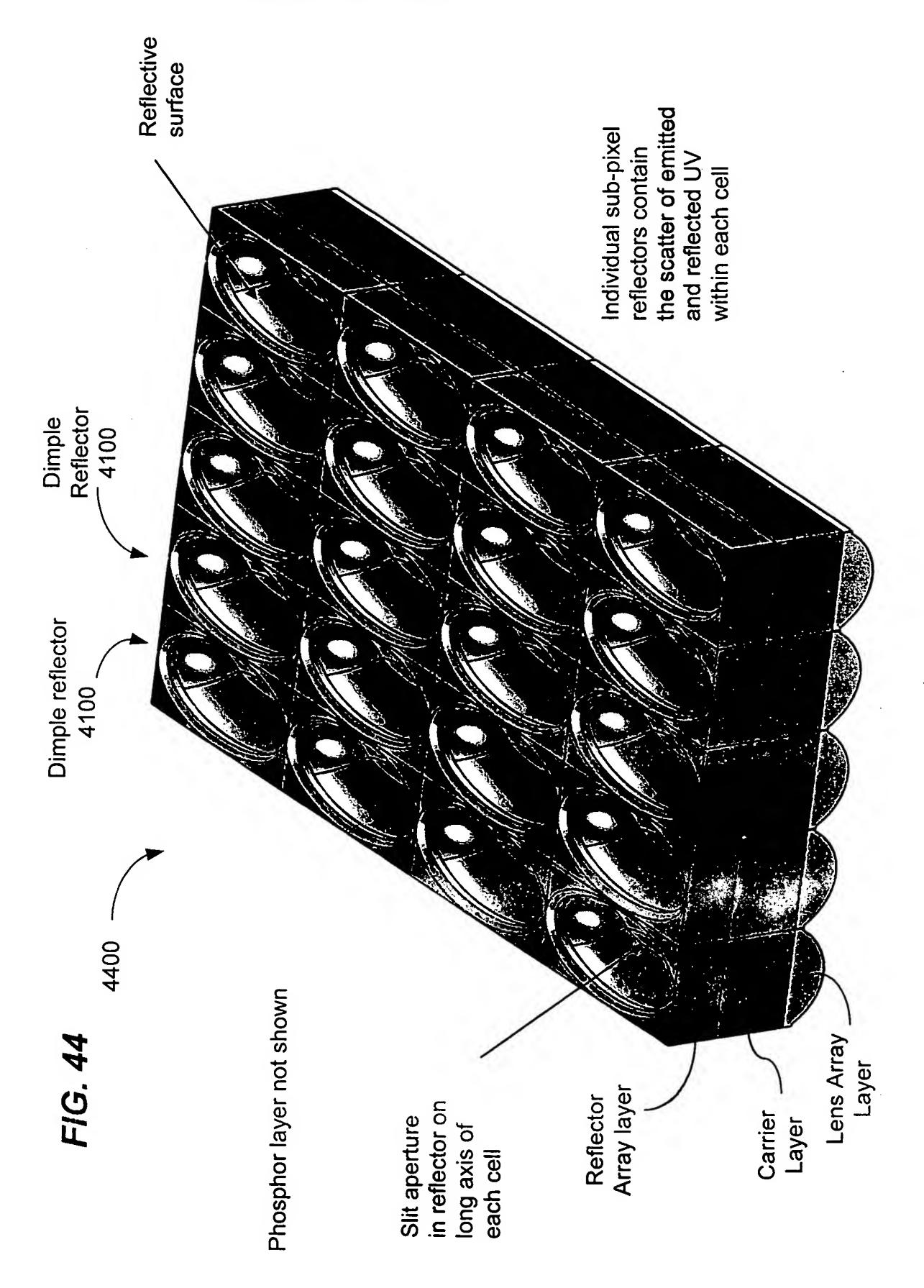
Subpixel with hemispherical Reflector



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Applicant(s): David Kent; Phillip H. Malyak; Roger A. Hajjar;

Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

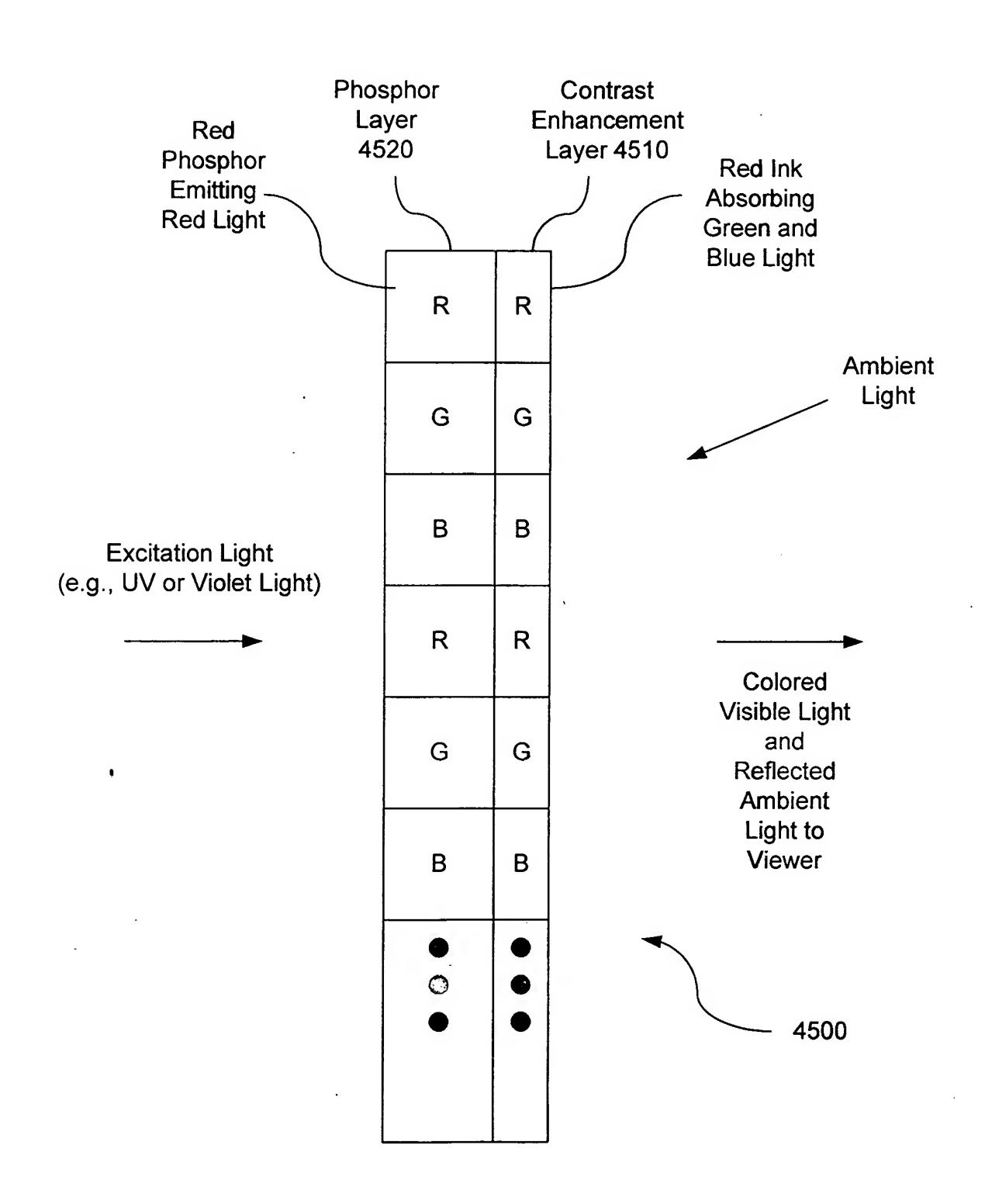


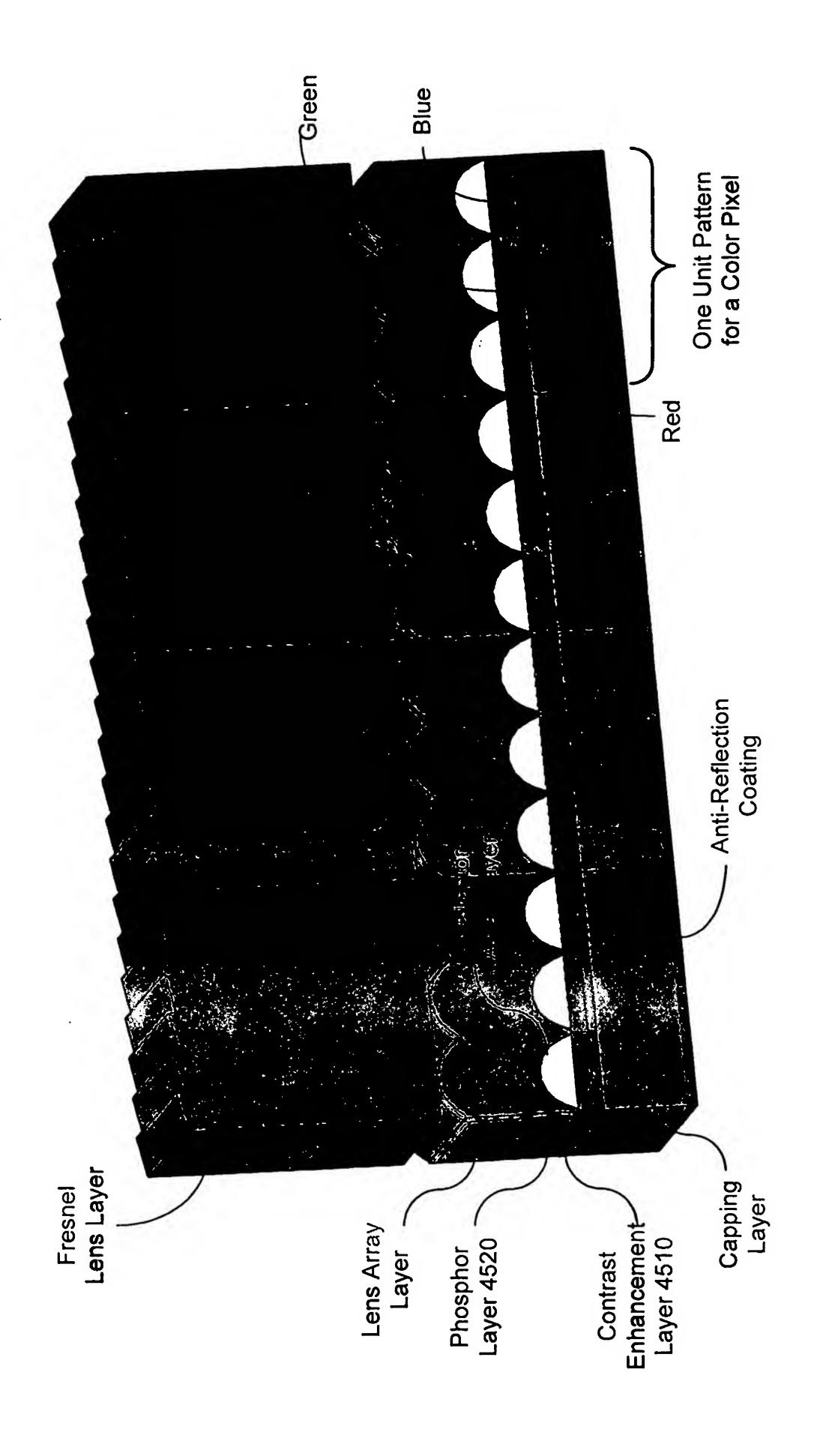
Matter No.: 18994-008US1 Page 46 of 53 Applicant(s): David Kent; Phillip H. Malyak; Roger A. Hajjar;

Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FIG. 45



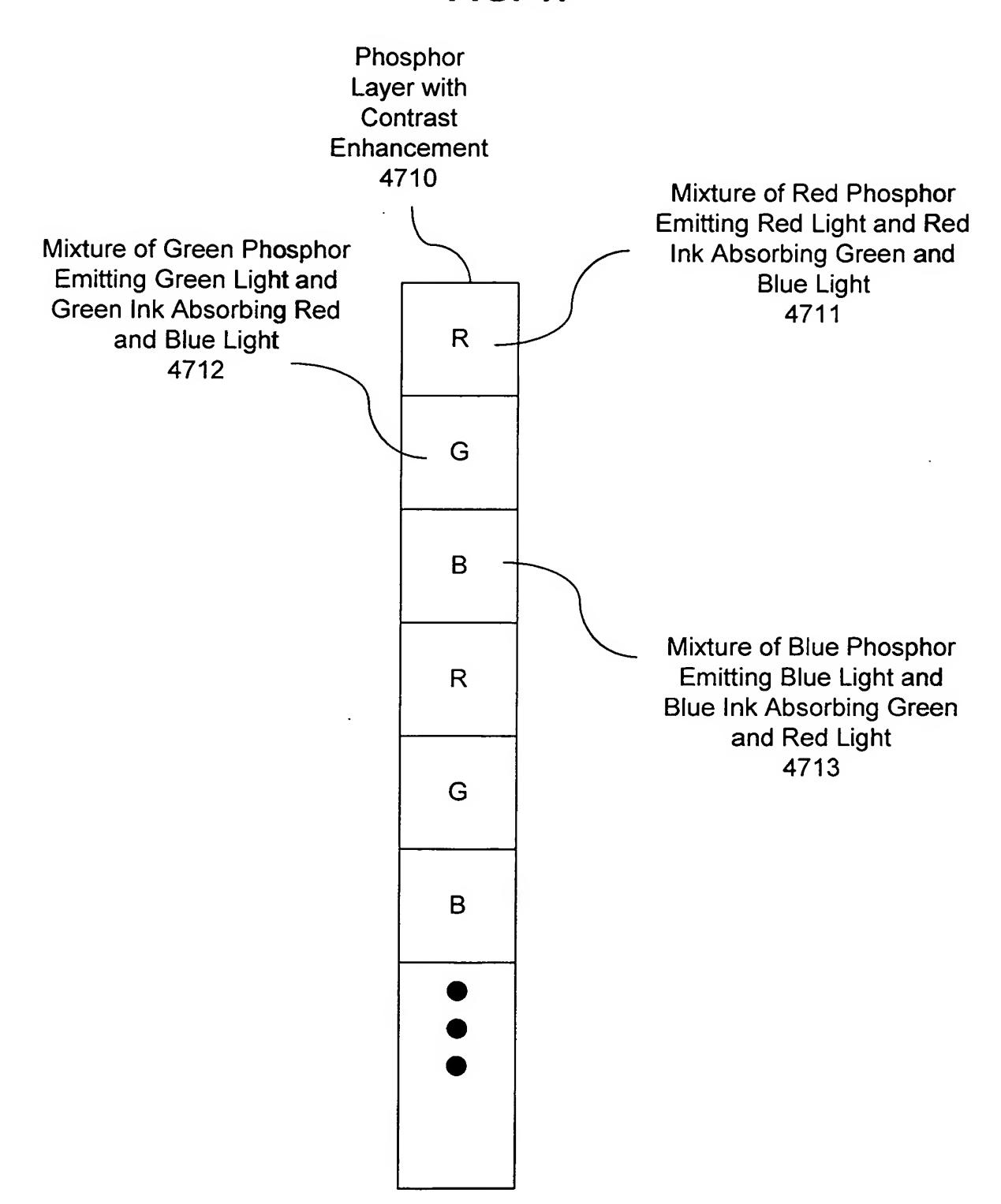


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Patrick Tan; David Kindler;

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FIG. 47



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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FIG. 48

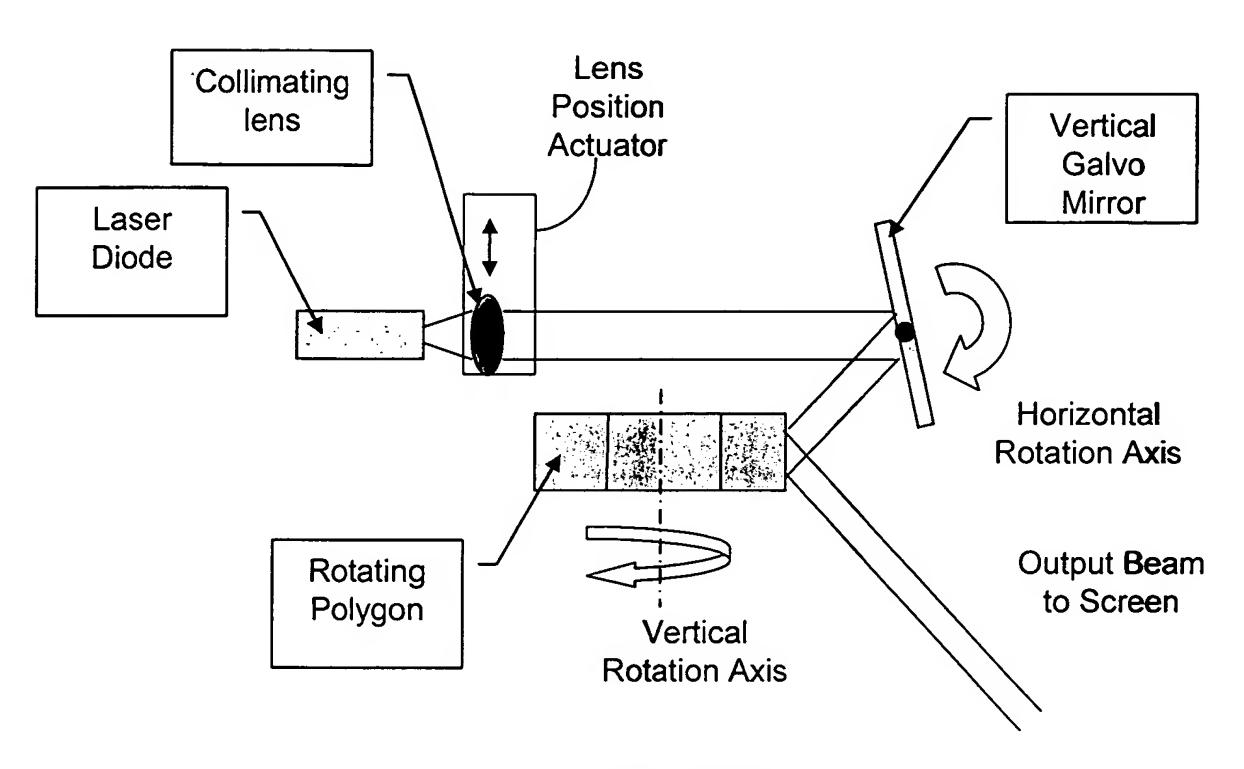
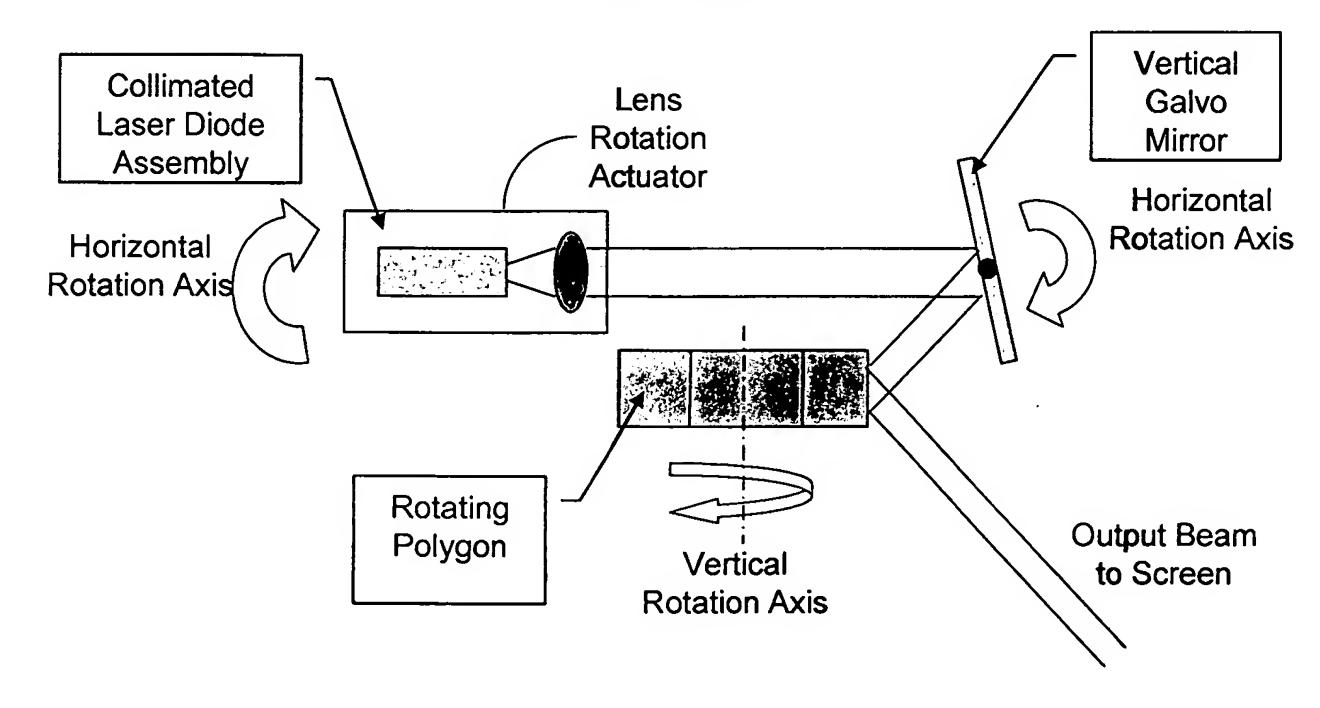


FIG. 49A



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Patrick Tan; David Kindler;

DISPLAY SYSTEMS HAVING SCREENS WITH OPTICAL

FLUORESCENT MATERIALS

FIG. 49B

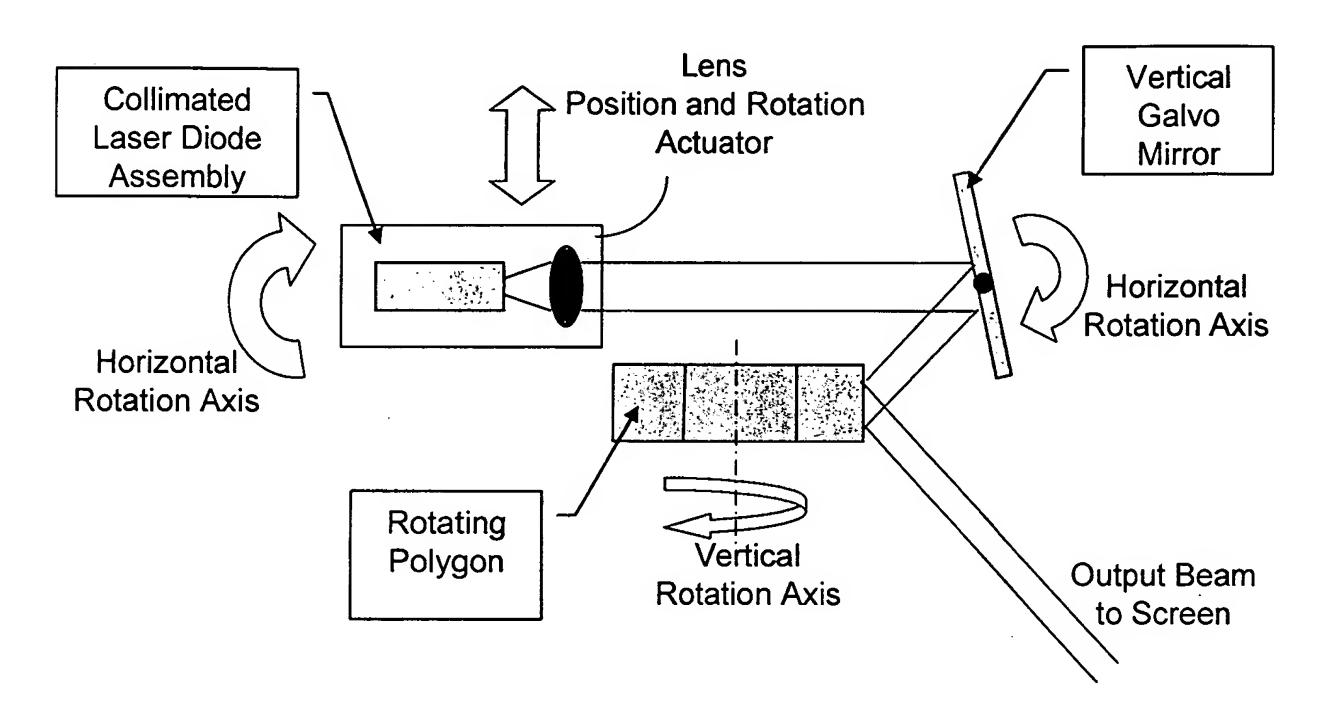
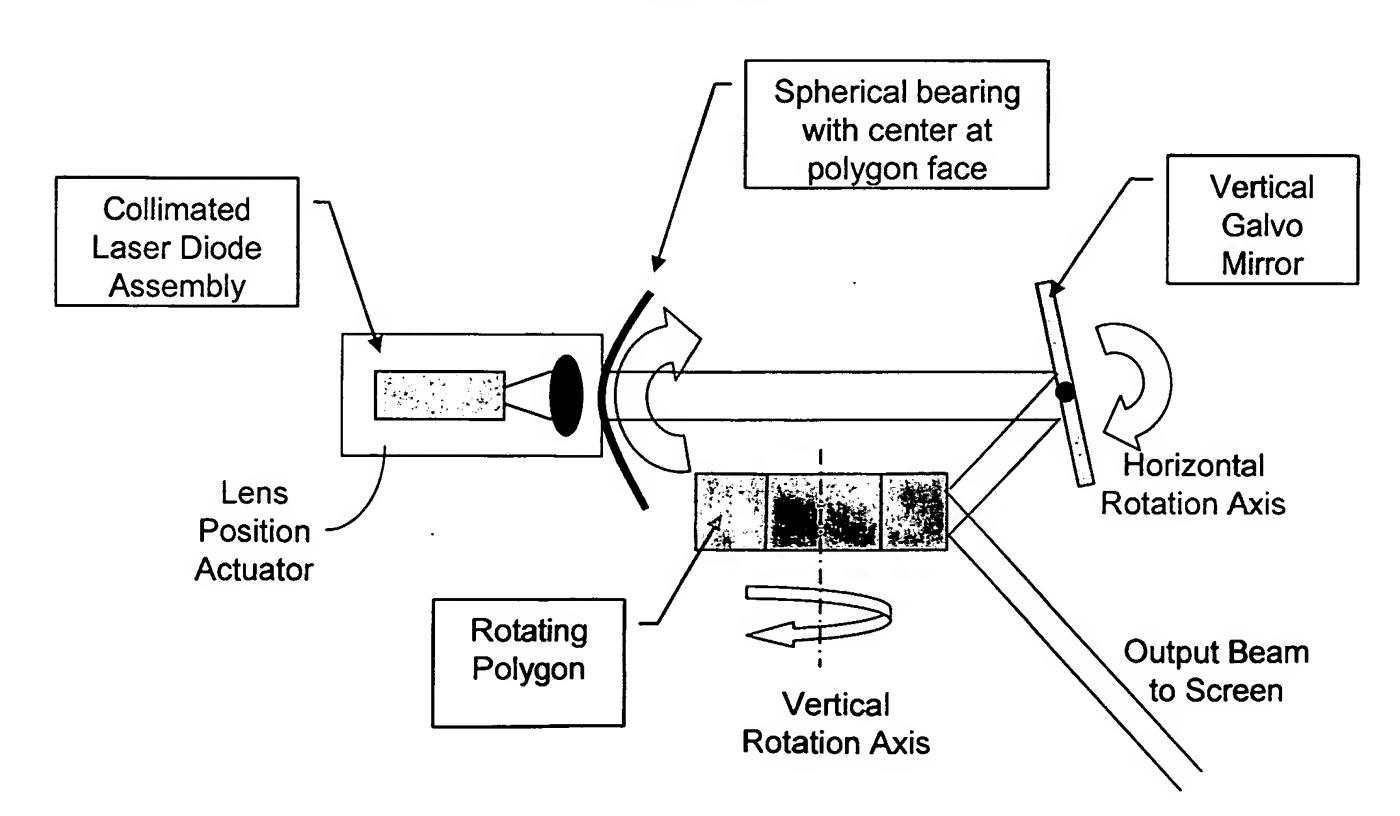
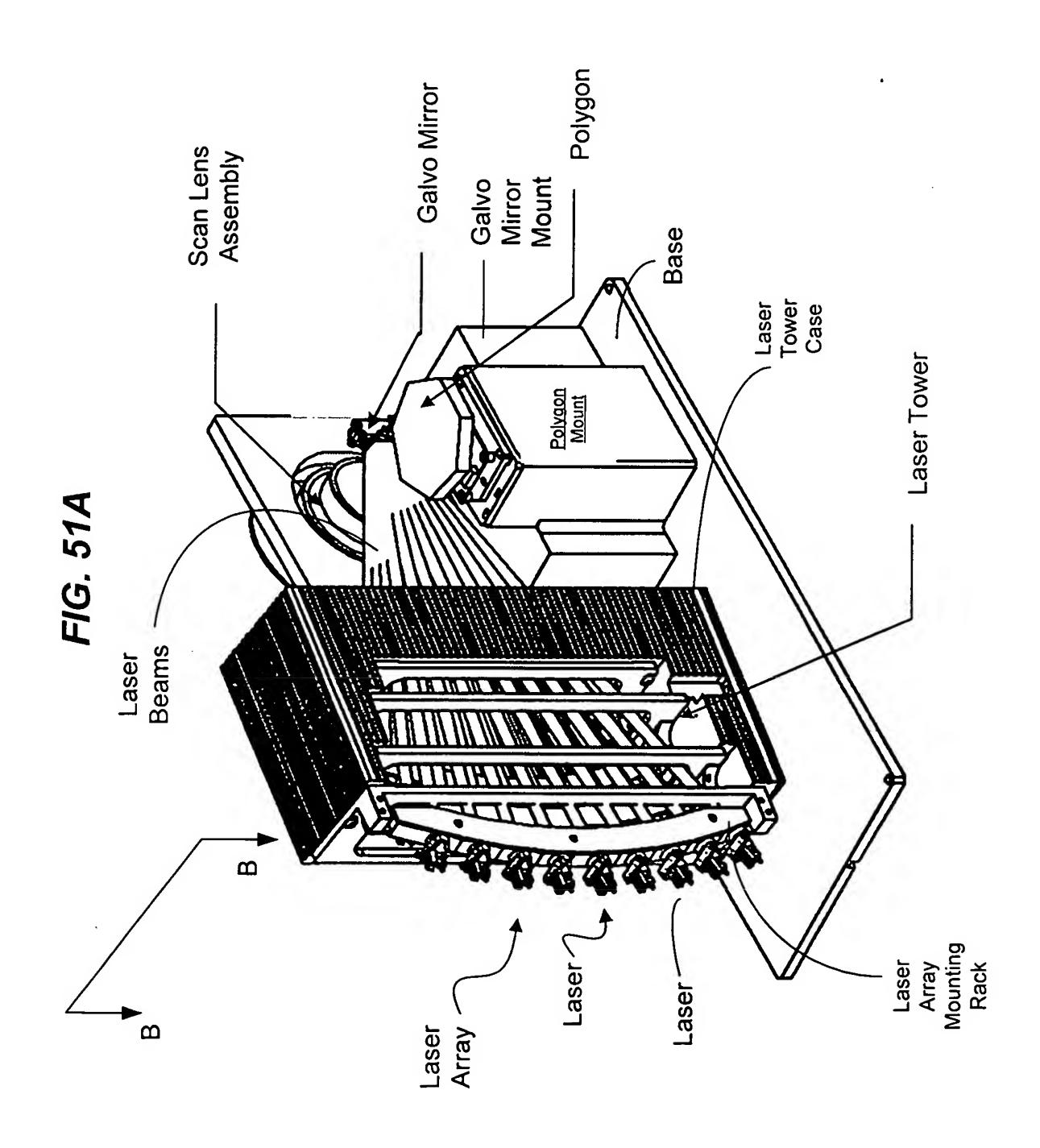


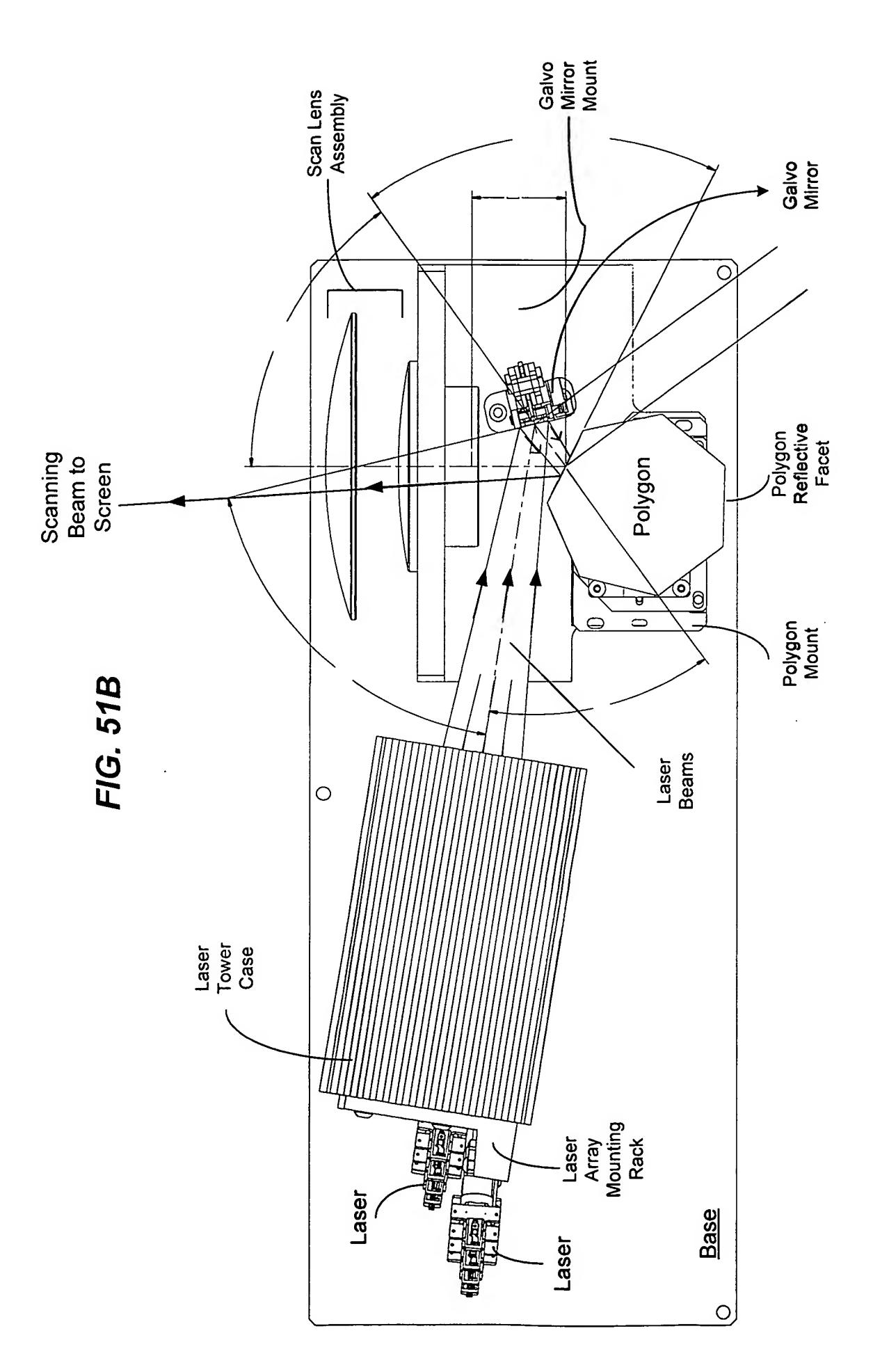
FIG. 50



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